PROJECT MANAGEMENT PRACTICE IN NIGERIAN PUBLIC SECTOR ORGANISATIONS – A CASE STUDY

BY

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DEDICATION

Dedicated to my mum and dad – for their love, care, support and for always being there for me; To my siblings – Idayat, Zainab, Abdulkadir and Ruqayat, to Abdulgafar and Tejan, and my nephews and nieces, who are always a source of joy for me.

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ABSTRACT

This research was carried out to investigate how organisational project management is practiced in the Nigerian public sector and establish its strengths, weakness and areas requiring improvement. It was also carried out to add to the existing but limited research work in this area.

A pilot project management maturity and assessment model was developed using 28 out of 52 APM BoK topics and five maturity levels of SEI's CMM. The Federal Capital Development Authority (FCDA) was used as case study and assessments involved interviews with 21 of its management staff.

The findings of the assessment put FCDA on maturity level 1.92 out of 5, indicating that a project management practice existed. However, the practice was not structured and it used basic processes and procedures. It was also established that the project management *knowledge* (maturity level 2.76) within the organisation positively influenced the *practices and procedures* (maturity level 2.05) used, even though the *tools and techniques* (maturity level 1.43) and *organisational infrastructure* (maturity level 1.43) expected to support a structured practice were inadequate.

Benchmarking and gap analysis carried out indicated that the key areas for improvement were in core project management topics, which FCDA should focus on to build a more structured organisational project management practice. These topics included project success and benefit management, project management plan and risk management and setting up of a project office.

Key words: organisational project management; project management maturity; benchmarking; gap analysis; Nigerian public sector organisations.

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LIST OF ACRONYMS

APM	Association for Project Management
APM BoK	Association for Project Management Body of Knowledge, 5th edition (2006)
BoK	Body of Knowledge
CMM	Capability Maturity Model
CSFs	Critical Success Factors
ECITB	Engineering Construction Industry Training Board
ENAA	Engineering Advancement Association, Japan
FAST	Function Analysis System Technique
FCDA	Federal Capital Development Authority
FCC	Federal Capital City
FCT	Federal Capital Territory
FCTA	Federal Capital Territory Administration
ICB	IPMA Competence Baseline
ICT	Information and communications technology
IPMA	International Project Management Association
KPIs	Key Performance Indicators
NCSPM	National Competency Standards for Project Management – Australia
OGC	Office of Government Commerce
OLCI	Operational Level Cooperation Initiative
OPM3	Organisational Project Management Maturity Model
P2M	A Guide of Project & Programme Management for Enterprise Innovation
P3M3	Portfolio, Programme and Project Management Maturity Model
PM	Project management
PMBOK	A Guide to Project Management Body of Knowledge (also PMBOK ® Guide)
PMI	Project Management Institute
PMM	Project Management Maturity
PMP	Project Management Plan
PMU	Project Monitoring Unit of FCDA
PRINCE2	Projects in Controlled Environments 2
SEI	Software Engineering Institute of Carnegie Mellon University
US	United States of America
WBS	Work Breakdown Structure

1.0 Introduction

1.1 Background to the study

Project management (PM) methods are being widely used to improve efficiency and effectiveness in public and private sector organisations in developed countries. Developing countries such as Nigeria also stand to benefit from these practices and developments.

There have been several research carried out on project management practices in developing countries (Muriithi and Crawford, 2003; Abbasi and Al-Mharmah, 2000; Stuckenbruck and Zomorrodian, 1987; Cusworth and Franks, 1993; Rwelamila, 2006). These research works show that although efforts are being made, several challenges exist regarding successful implementation. The challenges identified were due to socio–cultural, political, institutional, educational and economic factors. Notable amongst the authors' recommendations were the need for project management frameworks, guides and standards, adapted to suit the contingent factors identified rather than directly applying those used in developed countries.

These research works have been carried out with different objectives and methodologies. For example, the literature by Cusworth and Franks (1993) focused on systems and skills used in managing projects in developing countries; Abbasi and Al-Mharmah (2000) focused on PM phases and tools used in public sector organisations; while some others focused on case studies of projects carried out in developing countries.

However, there has not been much work on project management practices from an organisation / enterprise level in developing countries. The advantage of looking at project management from an organisational level is that it will show more insights into the ability of organisations to carry out project management. By this, the relationship between an organisation's strategy and its project strategy (Jamieson and Morris, 2004) and the environment that will support both its project management capability and the delivery of successful projects will be considered, rather than management of single project scenarios.

Another issue is that there has been a lot of changes in some developing countries over the years through government and institutional reforms; introduction of lessons learnt from education and capacity building in developed countries and improving financial and economic environment. The rate of change in some countries appears to be high to the point that some literature on project management and even general management in such countries may become irrelevant or inapplicable as assumptions and indicators of the existing situation.

Within these contexts, there will be a need to reconsider the notion of application of project management practices in developing countries.

1.2 Statement of the Problem

The problems identified above raise the research question of the extent to which organisations in developing countries accord to established project management practices and methods. Do they have a project management practice? Will such environments encourage application of effective and efficient project management? What are the challenges faced for successful implementation? What do they need to do for successful implementation?

To narrow down the context of the problem and the research scope, this research focuses on organisations involved in the Nigerian construction industry, where the public sector remains the largest client for construction projects (Oladapo, 1998).

Although some research work have been carried out in universities on the management of construction projects in Nigeria, there has been little or no work on organisational project management within individual firms to answer the research questions identified above.

1.3 Research aim and objectives

These questions provide the thrust for the research, which **aims to investigate how public sector organisations in Nigeria apply project management practices**. The research will focus on a case study of the Federal Capital Development Authority (FCDA), an organisation responsible for initiating, managing and delivering a wide range of projects and programmes as part of its key activities.

The objectives of the research are:

- To develop a pilot 'project management maturity model' based on selected project management knowledge areas appropriate to assess FCDA's current practice.
- To use benchmarking and gap analysis concepts to compare, in principle, the maturity levels in FCDA with general PM best practices.
- To identify strengths, weaknesses and key improvement areas for FCDA.
- To conclude on the level to which public sector organisations accord to established project management practices and make recommendations for organisational improvement in FCDA.

1.4 Research methodology and approach

The method used was to carry out an in-depth review of project management focusing on project management guides, standards and best practices on one part and literature on organisational project management capability and maturity on the other side.

The aim of this focus in secondary research was to use the lessons learnt to develop an objective pilot 'project management maturity model' as the research methodology suitable to assess FCDA's current project management practice. The developed model used project management knowledge areas selected from the APM BoK and five maturity levels following SEI's CMM and lessons learnt from OGC's P3M3 and other related research work on maturity models.

The research then adopted case study approach. Qualitative research method using in-depth interviews with senior management and review of relevant data from FCDA were used to understand and determine a maturity level representative of FCDA for the selected aspects of project management.

Analyses of the findings using benchmarking and gap analysis concepts were then used to compare the maturity levels in FCDA with project management best practices. After discussing the empirical findings, conclusion on the level of practice found and recommendations for organisational improvement in FCDA was made. Areas for further research and an indication of research limitations were also drawn.

1.5 Significance of the study

The research will be beneficial to three groups of problem owners. First, it will provide FCDA with a good understanding of the nature of its PM practice from an organisational / enterprise level, its strengths, weaknesses and key improvement areas required. Secondly, this knowledge will be useful for other Nigerian public sector organisations and government policy makers considering the country's efforts in effectively and efficiently managing its path towards sustainable economic development and growth.

Thirdly, the research will add to the existing but limited body of knowledge on project management practices globally, draw lessons learnt for PM maturity, benchmarking and gap analysis. In addition, a pilot PM maturity model will be developed based on the APM BoK.

1.6 Scope of the research

The research does not look at the arguments and issues on whether there can be direct applicability of project management practices in developing countries and the socio – cultural, political and economic factors affecting its use.

However, it is taking the argument from a different context. The research will look at the present level to which FCDA practices organisational project management based on best practice guidance, to provide an indication of challenges faced for implementation at in-depth case study level and make recommendations for organisational improvement.

1.7 Structure of the report

Chapter 1 provides an introduction to the research. Chapter 2 provides literature review on the project management body of knowledge, guides and standards focusing on the APM BoK and PMBOK ® Guide. Literature review on the development and assessment of project management capability in organisations is presented in Chapter 3. It includes review of project management maturity models, benchmarking and gap analysis. Chapter 4 explains the research methodology used. Chapter 5 describes the case study organisation – FCDA. Chapter 6 presents the empirical findings and analysis of FCDA's project management maturity. Chapter 7 provides the conclusion, recommendations and limitations of the research.

2.0 Project management body of knowledge, guides and standards

2.1 Introduction

There has been extensive research on the implementation of PM in developed countries. These together with practical experiences have been developed into explicit knowledge as **guides, standards and bodies of knowledge**, which will be reviewed in this chapter.

Research have also identified and captured best practices for managing projects, programmes and portfolios suitable to different organisations, sectors, industries and even project scenarios. The best practices also assist in the updating and development of these standards and guides.

2.2 Development of project management body of knowledge, guides and standards

Numerous research and literature on project management (Hamilton, 1997; Morris & Pinto, 2004; Kerzner, 2006; Weaver, 2007; Bredillet, 2007; Robbins & Coulter, 2007; Walker, 2007; Pollack, 2007) have indicated the increasing interest and use of project, programme and portfolio management by individuals, organisations and industries globally.

The need for project management professionals to be recognised professionally for their level of competence and expertise in managing projects have amongst other things lead to the development of project management body of knowledge and standards (Crawford, 2004). These definitions and development have been instrumental in the recognition and application of project management as a profession today.

Project management guides and standards generally incorporate and define the skills, behaviours and knowledge components required by individuals and organisations that manage projects.

Different institutions and associations have published bodies of knowledge (BoKs) based on tacit and explicit knowledge transfer between research and practice to guide their members and/or other stakeholders in the field of project management. This drive has also aimed to ensure the use of common terminology, process, procedures, skills and behaviours for the profession (Crawford, 2004).

Duncan (1998) as cited by Crawford (2004) gave a valuable classification of guides and standards into three broad areas based on their focus and purpose. These are presented in Table 1. The list represents the most widely recognised, accepted, distributed and used.

This report is limited to the examination of the guides and standards for 'projects' and 'organisations'. In particular, the PMBOK ® Guide and APM BoK are reviewed for 'projects' while aspects of OPM3 and P3M3 are reviewed for 'organisations'. Those classified under 'people' focusing on performance–based standards will not be examined.

Table 1: Classification of Project Management Guides and Standards

- Projects: These are 'knowledge' guides focusing mainly on the management of individual projects and on what project management practitioners need to know. They include
  - Association for Project Management Body of Knowledge (APM BoK)
  - PMI's A Guide to Project Management Body of Knowledge (PMI BoK ® Guide)
  - ENAA's P2M: A Guide of Project & Programme Management for Enterprise Innovation
  - ICB: IMPA Competence Baseline

- People: These are mainly performance–based standards used for assessing the competence of project management practitioners. They include
  - National Competency Standards for Project Management (NCSPM) - Australia
  - National Occupational Standards for Project Management (ECITB)
  - National Certificate in Project Management – South Africa

- Organisations: These focus on management of multiple projects, programmes and enterprise project management. They include
  - ENAA's P2M: A Guide of Project & Programme Management for Enterprise Innovation
  - PMI's Organisational Project Management Maturity Model (OPM3)
  - OGC's Portfolio, Programme and Project Management Maturity Model (P3M3)
  - OGC's PRINCE2
  - OGC's Managing Successful Projects

Source: Crawford (2004)

2.2.1 A Guide to the Project Management Body of Knowledge (PMBOK® Guide)

PMI's research into the development of a body of knowledge for project management began in the 1980s (PMI, 2004).

The first edition of the existing model of PMBOK® Guide was published in 1996 and this was reviewed and updated with a second edition in 2000. Now in its third edition published in 2004, the PMBOK ® Guide notably includes and describes nine project management knowledge areas, forty-four project management processes, five project management process groups, the project life cycle and phases, and the general context and environment within which projects and project management operate.

Figure 1 shows a representation of the 'project management process mapping' of the forty-four processes to the nine knowledge areas and five process groups adapted from the PMBOK ® Guide, 2004. From the figure, the project management processes can be looked at both horizontally and vertically. Horizontally to indicate how they fit into their knowledge areas, and vertically to indicate how they fit into their process groups. PMI (2004) notes that the processes are mapped to the process group in which the 'most' activity of the process takes place.

The primary purpose of the PMBOK ® Guide is 'to identify that subset of the Project Management Body of Knowledge that is generally recognised as good practice' on most projects most of the time (PMI, 2004, pp. 3). The PMI emphasises that the guide only deals with single projects and the project management processes it considers as good practice, adding that other standards (that it has published) deal with areas such as those on organisational project management maturity and project manager competence.

The organisational approach of management of projects (Morris, 1997) and ongoing operations by organisations (referred to as 'management by projects'), is also identified, but PMI emphasises that discussion of such approach is beyond the scope of the PMBOK (PMI, 2004, pp. 8).

As a result, the PMBOK ® Guide describes general areas of expertise required by project teams for effective project management, illustrated in Figure 2. It emphasises that the Guide itself, is just a subset of the larger Project Management Body of Knowledge, which also overlaps other management disciplines.

Knowledge Area Processes	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter 4.2 Develop Preliminary Project Scope Statement	4.3 Develop Project Management Plan	4.4 Direct and Manage Project Execution	4.5 Monitor and Control Project Work 4.6 Integrated Change Control	4.7 Close Out
5. Project Scope Management		5.1 Scope Planning 5.2 Scope Definition 5.3 Create WBS		5.4 Scope Verification 5.5 Scope Control	
6. Project Time Management		6.1 Activity Definition 6.2 Activity Sequencing 6.3 Activity Resource Estimating 6.4 Activity Duration Estimating 6.5 Schedule Development		6.6 Schedule Control	
7. Project Cost Management		7.1 Cost Estimating 7.2 Cost Budgeting		7.3 Cost Control	
8. Project Quality Management		8.1 Quality Planning	8.2 Perform Quality Assurance	8.3 Perform Quality Control	
9. Project Human Resource Management		9.1 Human Resource Planning	9.2 Acquire Project Team 9.3 Develop Project Team	9.4 Manage Project Team	
10. Project Communications Management		10.1 Communications Planning	10.2 Information Distribution	10.3 Performance Reporting 10.4 Manage Stakeholders	
11. Project Risk Management		11.1 Risk Management Planning 11.2 Risk Identification 11.3 Qualitative Risk Analysis 11.4 Quantitative Risk Analysis 11.5 Risk Response Planning		Risk Monitoring and Control	
12. Project Procurement Management		12.1 Plan Purchase and Acquisitions 12.2 Plan Contracting	12.3 Request Seller Responses 12.4 Select Sellers	12.5 Contract Administration	12.6 Contract Closure

Figure 1: Mapping of the Project Management Processes to the Project Management Process Groups and the Knowledge Areas
Source: Adapted from PMBOK ® Guide (PMI, 2004)

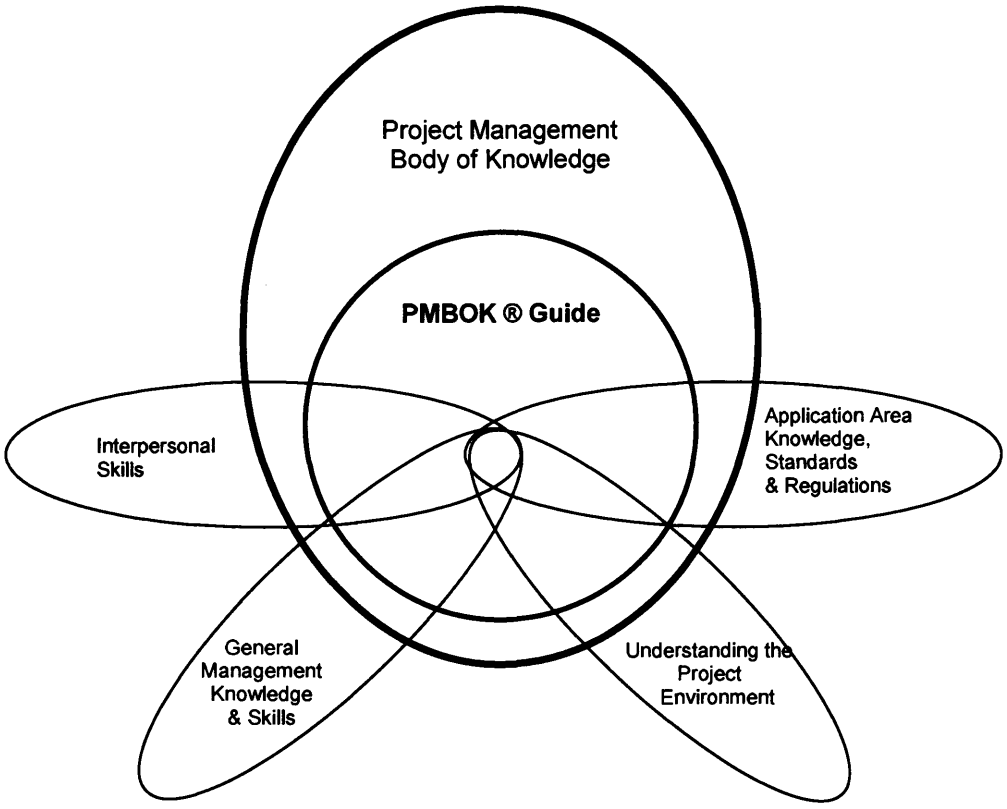

Figure 2: Areas of expertise needed by the project team for effective project management

Source: PMBOK ® Guide (PMI, 2004)

Application area knowledge, standards and regulations are required for industry specific projects. There is also need to understand the cultural, social, international, political and physical environment that affects projects. The management of 'interpersonal relationships' is also important with focus on areas such as effective communication, leadership, motivation, negotiation and problem solving.

The last expertise area mentioned is the general management knowledge and skills, which encompasses 'planning, organising, staffing, executing, and controlling the operations of an ongoing enterprise' (PMI, 2004, pp. 15). These areas include organisational structures, health and safety, contracts and commercial law, information technology.

The relationship between portfolios, programmes, projects, subprojects (and their management) and the higher strategic business objectives of organisations is described briefly as well as the nature and purpose of a project management office.

2.2.2 Association for Project Management Body of Knowledge (APM BoK)

APM published its first edition of the APM BoK in 1992. Following reviews and updates, second, third and fourth editions were published in 1994, 1996 and 2000 respectively. Now in its fifth edition published in 2006, the BoK presents fifty-two project management topics or knowledge areas (grouped into seven sections) and provides their definitions, general explanations and references for further reading and understanding.

APM (2006) contends that the principal aim of the APM BoK is to give 'an introduction and scoping guide to each of the topics that professionals in project management consider to be essential components of the discipline' (APM, 2006, pp. xv). Although, the definitions and explanations are in the project management context, they can also be interpreted and applied to programme and portfolio management scenarios. The structure of the APM BoK is presented in Figure 3. Appendix A presents a descriptive summary of the sections and topics.

All the knowledge areas or topics appear to be interdependent and linked. Some topics may also be applicable in other sections within the BoK. The APM BoK itself emphasises that some topics should not be used in isolation. For example, the development and use of a project management plan will require scope management, scheduling and resource management, which are all separate topics in another section.

One unique feature is that the APM BoK combines technical and business related issues for project definition and takes a 'management of projects' approach (Morris, 1997; Morris and Pinto, 2004; Morris et al, 2006) in an organisation. One the other hand, a criticism may be that it includes a wide range of topics that may not be considered in some instances as part of project management (but rather general management) and then again, it does not enable users to distinguish core project management subjects from other subjects.

This criticism may be countered considering the nature of the research that led to the development and review of the APM BoK. For the 5th edition, Morris et al (2006) explained that results of their research indicated that respondents to the high-level data collection procedure were in favour of the selected topics (therein published) and the 'management of projects' approach used as an appropriate method of presenting the knowledge base required for managing projects. They notably added that the IPMA's ICB and ENAA's P2M appear to have similar coverage and approach.

Association for Project Management Body of Knowledge (5th edition) – SECTIONS AND TOPICS	
Section 1: Project management in context	**Section 5: Business and commercial**
1.1 Project management	5.1 Business case
1.2 Programme management	5.2 Marketing and sales
1.3 Portfolio management	5.3 Project financing and funding
1.4 Project context	5.4 Procurement
1.5 Project sponsorship	5.5 Legal awareness
1.6 Project office	
	Section 6: Organisation and governance
Section 2: Planning the strategy	6.1 Project life cycles
2.1 Project success and benefits management	6.2 Concept
2.2 Stakeholder management	6.3 Definition
2.3 Value management	6.4 Implementation
2.4 Project management plan	6.5 Handover and closeout
2.5 Project risk management	6.6 Project reviews
2.6 Project quality management	6.7 Organisation structure
2.7 Health, safety and environmental management	6.8 Organisational roles
	6.9 Methods and procedures
Section 3: Executing the strategy	6.10 Governance of project management
3.1 Scope management	
3.2 Scheduling	**Section 7: People and the profession**
3.3 Resource management	7.1 Communication
3.4 Budgeting and cost management	7.2 Teamwork
3.5 Change control	7.3 Leadership
3.6 Earned value management	7.4 Conflict management
3.7 Information management and reporting	7.5 Negotiation
3.8 Issue management	7.6 Human resource management
	7.7 Behavioural characteristics
Section 4: Techniques	7.8 Learning and development
4.1 Requirements management	7.9 Professionalism and ethics
4.2 Development	
4.3 Estimating	
4.4 Technology management	
4.5 Value engineering	
4.6 Modelling and testing	
4.7 Configuration management	

Figure 3: APM BoK – Sections and Topics
Source: APM BoK 5th edition (APM, 2006)

One aspect that could have been useful in the presentation of the APM BoK is to elaborate on the project life cycles and processes and how the different project management topics lie within them. The criticism could be countered by the APM explaining that the APM BoK is not meant to be a 'mechanistic set of rules or practices' to be followed, but a guide that can be used flexibility to suit the context of particular projects. Morris et al (2006) also described research limitations and reasons for the nature of the structure during the update from the 4th to 5th edition.

In general, the BoKs appear to share a nucleus of core areas as majority of their content and topics are commonly covered. Notably, there is a fundamental difference in the purpose of each of the guides, their origins in terms of country and the processes and procedures adopted therein.

The APM BoK is shorter than the PMBOK in terms of size, but it has a wider coverage. The PMBOK is more in-depth in its descriptions of project management processes and procedures while APM BoK includes references for further reading. The PMBOK appears to be more focused on the management of single projects but the APM BoK goes a step further by slightly gearing towards organisational project management or organisational issues affecting the management of projects. For example, the APM BoK covers all the 'areas of expertise' that the PMBOK indicated are beyond its scope.

These guides and standards appear to suggest that there has been more research on the management of individual projects and less on management of multiple projects, programmes and portfolios or enterprise project management. However, Crawford, L (2006) argues that this general position has changed. This is evident in the guides and standards such as ENAA's P2M, PMI's OPM3, OGC's P3M3 and PRINCE2 that now give guidance in management of multiple projects and enterprise / organisational project management.

The various BoKs have generally been reviewed and updated since their first editions. With the growing knowledge base in the profession, through tacit and explicit knowledge transfer between research and practice (PMI, 2004), the BoKs will continue to change to incorporate the latest findings and practices. This view is supported by the suggested emphasis on continuous research in project management (Morris, 2000) and the need for continuous updating of the BoKs (Morris, 2001; Morris et al, 2001).

2.2.3 Development of global project management body of knowledge

There have been efforts on the development of a global project management body of knowledge. Research carried out by Crawford (2004) reviewed the works of the Operational Level Cooperation Initiative (OLCI) on this issue. He explained that the group, formed in 1998 by individuals who had been actively involved in the development and review of other BoKs, decided to start building a global project management knowledge base from a neutral point, rather than using any of the existing BoKs as a base for structure or content. He added that OLCI identified three key issues during the course of their work. First, existing BoKs are only guides to specific parts of the complete project management knowledge. Secondly, rather than having a global body of knowledge in static document form, it should be in an interactive and flexible form to allow usage to suit the knowledge areas relevant to users at a point in time. Thirdly, that there are many possible forms of structures for BoKs and this will mainly address different needs and purposes for developing the BoK.

Implication of this is the need to consider the various BoKs as different 'interpretations' of selected aspects of the same body of knowledge rather than as competing documents with different views.

2.3 Summary: Implications of the review of BoKs for the research

As also indicated in the PMBOK ® Guide, it therefore appears that no single document can completely capture or contain the whole body of knowledge of project management combining the tacit and explicit knowledge embodied in published and unpublished literature and established and emerging practices of practitioners. The BoKs themselves have indicated that they are not all-inclusive documents and are only intended to serve as a guide to aspects (or selected aspects) of project management knowledge.

These arguments, therefore, do not negate the fact that project management practices and capability development (in both developed and developing countries) can be based on the present bodies of knowledge available. They can all be applied subject to the context and environment surrounding their use.

Thus, it can be said that the knowledge, skills and behaviours that bodies of knowledge contain will be useful as a guide to answer the questions poised in this research. The next step is to establish how to assess project management practices carried out in organisations.

3.0 Development and assessment of project management capability in organisations

3.1 Introduction

The previous chapter explored the nature of project management and the knowledge, skills and behaviours required for its practice as a profession. In this chapter, 'organisational project management', methods of assessment and development of such capability within organisations is defined and explored.

PMI (2004) describes organisational project management as 'the application of knowledge, skills, tools and techniques to organisational activities, as well as to projects, program and portfolio activities, to achieve the aims of an organisation through projects'. This definition suggests that organisational project management goes beyond the management of single projects and even multiple projects or programmes. It incorporates some aspects of operational activities and managing the organisation's activities with a project, programme and portfolio driven approach.

Arguments on the increasing use of project management to achieve business objectives and/or the expected benefits of adopting such 'management by projects' approach by organisations (Hilson, 2001; Cooke – Davies, 2004a; Ibbs et al, 2004) will not be explored. However, a direct look at options for assessing and developing project management capability will be looked at with the aim of developing a methodology for answering the questions poised for the research.

Previous research show that the need for project management as an organisational capability has been followed strongly by the ideas of assessment and development in terms of capability maturity (Crawford, L., 2006; Cooke – Davies, 2004a). This view is supported by a number of authors (e.g. Kalantjakos, 2001; Ibbs et al, 2004) who have argued that the fundamental requirement for organisational improvement is to first gain a good knowledge regarding the organisation's current performance so as to serve as a baseline for anything else on further improvement.

Concepts of maturity models, benchmarking and gap analysis, which have been used for such assessments will be reviewed in this chapter.

3.2 Project management maturity models

Project management maturity can be defined as a measure of an organisation's current PM practice, sophistication and capability. It enables organisations to understand how well they perform with regards to their organisational project, programme and portfolio management practice (Ibbs, et al 2004). One of the most widely recognised methodology and theoretical framework for such assessment and capability development is the use of **maturity models**.

Cooke – Davies (2004a) summed up the importance of maturity models by indicating that 'maturity models in essence do for organisations seeking to implement project management methods and operate through projects, what bodies of knowledge have done for practitioners seeking to improve their ability to manage projects'. This underscores the importance of maturity models, which will be explored in detail.

3.2.1 Background to the use of maturity models (Origins of maturity models)

Origins of the concept of maturity models dates back to the late 1980s when the Software Engineering Institute of Carnegie Mellon University developed the Software Engineering Capability Maturity Model (SW-CMM) as a way of measuring an organisation's maturity in software engineering processes. Research into this breakthrough concept (supported by the US Government) was largely due to the need to deal with rising failure of software projects (Crawford, J., 2006; Cooke – Davies, 2004a).

Paulk et al (1996) indicates that the five levels of the CMM, illustrated in Figure 4, describe a scale for evaluating the maturity of an organisation's software process capability and prioritising improvement efforts.

Level 1 indicates immature organisations with no standard process, while Level 5 organisations are mature with standardised processes and the ability to measure their performance and apply lessons learnt.

There have been other similar models used for assessing organisations maturity in different fields such as personnel management, systems engineering, integrated produce and process development, etc (Cooke – Davies, 2004a; Crawford, J., 2006).

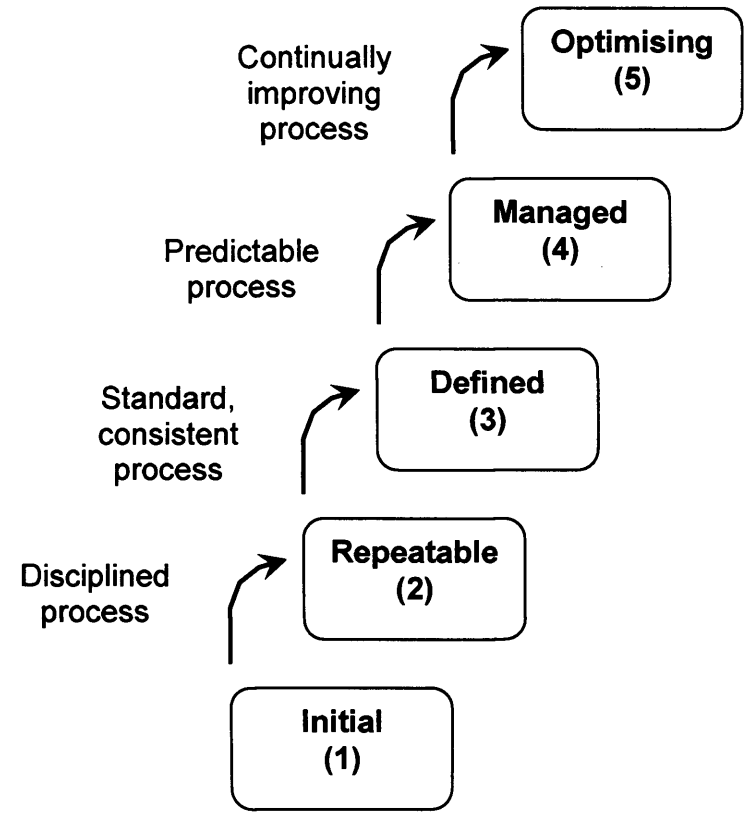

Figure 4: Five stages of maturity of the software development process

Source: Cooke – Davies (2004)

Against this backdrop, and the increasing need for organisational improvement in project management, the concept of maturity models also became popular in practice and research as a way for organisations to assess their project management capabilities, systems and processes.

3.2.2 Review of project management maturity models

Research works (e.g. Ibbs et al, 2004; Ibbs and Kwak, 2000; Pennypacker and Grant, 2003; Crawford, J., 2006; Lubianiker, 2000; Gareis and Huemann, 2000; Couture and Russett, 1998; Fincher and Levin, 1997; Remy, 1997; Seidman and McCauley, 1996) and even management practitioners (as highlighted by Cooke – Davies (2004a)), have developed models based on concepts of maturity models as tools for measurements to evaluate and/or compare project management practices and in some cases develop organisational improvement initiatives.

Cooke – Davies (2004a) argues that due to the dominance of practitioners in the field, the use of the concept has focussed more on practical application as compared to its 'theoretical validity'. There is also an indication by Cooke Davies et al (2001) that there were more than 30 of such models available based on the number studied by PMI during the development of OPM3 as its own organisational project management maturity model.

These models, developed for different purposes, used different concepts for assessment. Generally, they incorporate two elements. First, the levels of maturity (e.g. CMM's five levels), and secondly, the key aspects of project management that can be used for assessment or that need to be improved. Others used different concepts based on their experiences, or limitations of the CMM approach. Review of some notable maturity models found in research and practice are presented in Table 2. Appendix B includes further descriptive analysis.

It is noticed that those developed by academia have focused on answering a particular research question such as benchmarking comparison, while those coming form practitioners appear to focus on developing project management competence in organisations.

It may be argued that these models may not be suitable for organisational or enterprise project management capability assessment. This is because they have mostly focused on aspects of management of single projects, but have not looked at aspects of programme and portfolio management. For example, those models that used the PMBOK are actually considering management of single projects. This is with the view that the level of existing research at the time they were developed was mainly limited to the management of single projects as highlighted in the previous chapter. This is not to claim that these research works are invalid since arguably, they have different aims and objectives in mind.

Having considered the above models, it will also be important to review two other major models recently published by well-recognised and respected organisations.

	Author	Name of the model	Body of Knowledge used	Maturity level model	Other key features	Purpose of the literature	Method of assessment
1	Crawford, J, (2006)	PM Solutions' Project Management Maturity Model	PMBOK ® Guide (3rd edition) broken down into 9 project management knowledge areas and 43 project management components	5 maturity levels based on SEI's CMM : Level 1= Initial process; Level 2= Structured process and standards; Level 3= Organisational standards and industrialised process; Level 4= Managed process; Level 5= Optimising process	Incorporates 3 'special interest components' as focal areas to support improvement initiatives. They are Project Office, Management Oversight, and Professional Development	Serves as a guide for organisations who intend to carry out organisational project management assessment.	Suggests four options of which at least three should be used. Personal interviews, Artefact collection; Widespread survey input; Benchmark comparison to established standards.
2	Grant and Pennypacker (2006), Pennypacker and Grant (2003)	Same as Crawford, J, (2006)	Same as Crawford, J, (2006)	Same as Crawford, J, (2006)	Same as Crawford, J, (2006). But did not use special interest components	Objectives included comparison of project management practices across and within selected industries such as engineering and construction, information software, etc	Questionnaire survey comprising questions for each project management component to enable the determination of the maturity level that the organisation lies.
3	Remy (1997)	Micro-frame Technologies Project Management Maturity Model	Unique classification of project management body of knowledge into 8 sections and 51 categories based on the experience of Micro-frame Technologies in process improvement	5 maturity levels based on SEI's CMM Level 1= Ad-hoc; Level 2= Abbreviated; Level 3= Organised; Level 4= Managed; Level 5= Adaptive	Incorporates 'transition criteria' described for all 52 categories to indicate what should be improved in that category to move to the next maturity level.	Aim of the model is to serve as a guide for organisations that want to regulate their project management practice for both single projects and management by projects in organisational context.	Questionnaire survey comprising a set of questions for each project management category accompanied by descriptions of the categories. Questions enable mapping into maturity levels.
4	Levin et al, (1999)	ESI International's PROJECT FRAMEWORK	PMBOK ® Guide (1996 edition) broken down into 9 project management knowledge areas and 37 project management sub-processes	5 maturity levels based on SEI's CMM Level 1= Ad-hoc; Level 2= Consistent; Level 3= Integrated; Level 4= Comprehensive; Level 5= Optimising	Incorporates 3 interrelated components required by organisations for improving business and technical performance. They are People, Processes, and Technology	The strategic objective of the model is to serve as a guide to enable organisations assess its current project management capacity, identify strengths and weaknesses, and establish capacity baseline from which to set improvement objectives.	Collection of evidence in organisations on their performance and evaluating against requirements described in the maturuty model so as to make a judgment of whether a certain level of maturity has been achieved.

Table 2: Review of selected project management maturity models

	Author	Name of the model	Body of Knowledge used	Maturity level model	Other key features	Purpose of the literature	Method of assessment
5	Ibbs and Kwak (2000); Ibbs et al (2004)	Berkeley Project Management Process Maturity Model	PMBOK ® Guide considering the 9 project management knowledge areas, 5 project management processes, and environment for project-driven organisational approach	5 maturity levels based on SEI's CMM Level 1= Ad Hoc; Level 2= Planned; Level 3= Managed at Project level; Level 4= Managed at corporate level; Level 5= Learning	Developed a procedure to enable organisations estimate their project management return on investment	(1) Comparison of project management practices across and within selected industries. (2) Identify success drivers by testing correlation between maturity levels and actual project cost and schedule performance	Three part project management process maturity assessment questionnaire. Part 1 is for collecting general data on the organisation. Part 2 is a 162 multiple-choice questionnaire to measure maturity of an organisation. Part 3 collects project specific data on actual project management performance to enable comparison with maturity of the organisation.
6	Hillson (2001)	Project Management Maturity Model (ProMMM)	Four attributes to represent the aspects that organisations require for effective project management. The four attributes were Culture, Process, Experience and Application.	4 levels (unlike CMM) as follows: 1= Naive, 2= Novice, 3= Normalised, and 4= Natural.	(1) Based on lessons from SEI's CMM, the EFQM Excellence Model from the European Foundation for Quality Management and practice experience of its developers. (2) Use of 'attribute scores' as intermediate maturity positions between the main maturity levels.	The purpose of the model appears to be geared towards practical application in their client organisations as part of consultancy services to assist in project management improvement.	2 complementary methods for assessment: First, the use of 'ProMMM questionnaire' to enable determination of maturity levels. Secondly, 'ProMMM Structured Interviews' to supplement and improve the results obtained from the questionnaires.
7	Lubianiker (2000)	Project Management Assessment 2000	PMBOK ® Guide (1996 edition) broken down into 9 project management knowledge areas and 37 project management sub-processes.	Direct assessment applicable to organisations rather than using a maturity model.	Describes 4 enablers (Knowledge, Tools & Techniques, Practices, and Infrastructure) against the 37 processes to give 148 enablers which are then composed of two types of elements. First, 'Generic Elements' describe project management knowledge, tools, procedures and standards applicable to all organisations. Secondly, 'Specific Elements' describe those that suit particular organisations or industries.	To serve as an 'open, flexible tool' easily modified to suit its users. Involves a 10-step process for project management 'survey, improvement and reassessment'. Steps include (1) commitment (2) team building (3) calibration (4) review preparation (5) actual assessment of competence (6) preliminary analysis and verification of results; (7) management review and discussion of findings; (8) development of improvement plan (9) implementation' or executing the improvement initiatives; and (10) reassessment.	Unique assessment by software to allow survey and review on a computer network. Use of 450 questions in the databank.

Table 2: Review of selected project management maturity models (continued)

3.2.3 *Office of Government Commerce's Portfolio, Programme and Portfolio Management Maturity Model (P3M3)*

The P3M3 is a descriptive document mainly to give guidance to organisations who want to carry out assessment and process improvement initiatives. It can also be used as a foundation for developing tools for assessing and mapping improvement paths, including maturity questionnaires (OGC, 2006, pp. 3).

The guide adopts the five level maturity structure of the CMM, which are described at project, programme and portfolio management level. Each level in the model comprises a set of '*key process areas*' that indicate the expected nature of project and programme management practices each maturity level should have. The 32 '*key process areas*' are illustrated in Table 3.

The model itself appears to be innovative, because apart from allowing flexibility of use to suit what may be required by organisations, it maps the key process areas into particular maturity levels (a departure from other maturity models reviewed earlier). One aspect that remains unclear is the criteria used for breaking down the key process areas into the maturity levels. An explanation may come from the document itself, where OGC explains that it relies on lessons from various project management guides and standards and OGC's own experience, so that the P3M3 model can be used 'to identify the key practices that need to be fully embedded within an organisation to achieve the next maturity level' (OGC, 2006, pp 3).

The key significance of the P3M3 to this study is that it can serve as a unique guide to develop maturity questionnaires and as a model for performing programme and project management assessments and capability evaluations.

Level 1	
1.1	Project definition
1.2	Programme management awareness
Level 2	
2.1	Business case development
2.2	Programme organisation
2.3	Programme definition
2.4	Project establishment
2.5	Project planning, monitoring & control
2.6	Stakeholder management & communications
2.7	Requirements management
2.8	Risk management
2.9	Configuration management
2.10	Programme planning & control
2.11	Management of suppliers & external parties
Level 3	
3.1	Benefits management
3.2	Transition management
3.3	Information management
3.4	Organisational focus
3.5	Process definition
3.6	Training, skills & competency development
3.7	Integrated management & reporting
3.8	Lifecycle control
3.9	Inter-group co-ordination & networking
3.10	Quality assurance
3.11	Centre of Excellence (COE) role deployment
3.12	Organisation portfolio establishment
Level 4	
4.1	Management metrics
4.2	Quality management
4.3	Organisational cultural growth
4.4	Capacity management
Level 5	
5.1	Proactive problem management
5.2	Technology management
5.3	Continuous process improvement

Table 3: Key process areas within the maturity model in P3M3

Source: OGC (2006) – Portfolio, Programme & Project Management Maturity Model (P3M3)

3.2.4 Project Management Institute's Organisational Project Management Maturity Model (OPM3™)

OPM3 is a tool that assists organisations in understanding and assessing the state of their current organisational project management maturity and enabling them plan an improvement path to become more mature (PMI, 2008). It was released in form of a CD-ROM and guidance document.

Unlike other maturity models, it does not follow the SEI's CMM approach. However, maturity models that used the CMM (together with the PMBOK knowledge areas) were reviewed during the development of the OPM3 as indicated by Cooke Davies et al (2001). The four stages of process improvement used in OPM3 range from Standardize to Measure to Control and to continuously Improve, listed from the basic level to an advanced level.

The focus of PMBOK on single project management scenarios could the reason why PMI's research into the development of OPM3 decided to use a different approach to other maturity models developed many of which had drawn from the PMBOK as a guide. The OPM3 covers a wide range of organisational issues relating to portfolio, programme and project management and capability development.

The OPM3 will not be suitable for use for this research because it provides a means for self – assessment by the organisation concerned, or by external consultants. It is also a copyrighted tool, which is more suitable for practical purposes, not academic purposes.

The use of maturity models also has its own limitations and criticisms. Some of these research have identified several challenges in using the concept, indicating that there is still no globally accepted method for measuring project management practices and performances in organisations (Ibbs and Kwak, 2000; Pennypacker and Grant, 2003; Cooke – Davies, 2004a; Gareis and Huemann, 2000; Lubianiker, 2000). This also stems from the fact that maturity models may have to be industry specific, since different organisations have different objectives and may require elements and components of project management practice in varying degrees. This may also apply to different projects within an organisation (Morris, 2003; Cooke – Davies, 2004a).

There are several challenges in using CMM based models. As some researchers (e.g. Ibbs and Kwak, 2000) have argued that the CMM is biased towards information service organisations, one may question its suitability of use in project management. This argument may be countered by the explanation that the models are modified to suit the project management context (e.g. as done by OGC in P3M3).

Maturity models appear to tell us what the strengths and weaknesses of an organisation are, but they do not tell us how the organisation will be improved. In other words, it is just a step [the assessment part] in the process of organisational improvement (see Lubianiker, 2000). Other key aspects in improving organisational project management capability include commitment from the management of the organisation to want to improve and continuous review of improvement efforts. This criticism is echoed by Schlichter (2001) where he indicated that some models mention that they are for project management, others for organisational project management, but generally have all neglected the important aspect of 'a step by step method of developing and maintaining an organisation's ability' in project and programme management.

Another general limitation identified in the use of maturity models is that it can be prone to errors during assessment of performance. This is because the whole exercise (interviews, evaluation of standards, processes and company culture) appear to be subjective. Thus there is need to ensure high level and representative data collection and assessment methods as suggested by Ibbs and Kwak (2004).

Thomas and Jugdev (2002) critically reviewed the argument on the relevance of maturity models to organisations. They concluded that although maturity models enable the identification of strengths and weaknesses and also provide critical information for benchmarking and improvement, they do not provide all strategic benefits required by firms, and thus lead to 'temporary' competitive advantage, but not on a long term 'sustained' basis.

3.3 Benchmarking

Ibbs, et al (2004) describes **benchmarking** as 'a process that allows organisations compare aspects of their current PM practices with best practices'. They emphasised the need for a rigorous and comprehensive benchmarking methodology involving collection of general data on the organisations assessed, questionnaire or interview formats to understand and measure their standard of project management processes. This should be supported by the senior management and involve a reasonable number of employees experienced in the aspect they are being assessed for better effectiveness.

The P3M3 and OPM3 provide good guidance on assessment and benchmarking. The other maturity models reviewed above also carried out benchmarking using different styles and methods. Some of them benchmarked different organisations in different industries (Ibbs, et al, 2004; Pennypacker and Grant, 2003) while others were models to allow organisations benchmark themselves against best practice guides and standards (Crawford, J.,2006; Levin et al, 1999). This is not to say that those that benchmarked different organisations used different project management guides and standards as maturity models.

3.4 Gap analysis

Gap analysis is an assessment tool that enables the evaluation of an organisation's current state with its desired state (usually based on what best practice suggests) and determine key improvement areas (Ibbs, et al 2004). Closely related to benchmarking, its application appears to be that the 'gap' between the current practices of an organisation and the intended practice (best practices) will be the basis for focusing improvement initiatives. In a way, this reduces the limitations of using maturity models because organisations will be able to prioritise and focus their process improvement efforts.

There has not been much research work published on gap analysis. This is because it has been a tool mainly used in practice rather than research, i.e. by practitioners dealing with improvement initiatives with organisations.

3.5 Summary: Implications of the review of project management capability using maturity models, benchmarking and gap analysis

It is important for organisations to consider benefits that project management will give to their organisation (i.e. contribution to their business) before embarking on a maturity assessment and organisational improvement efforts. In addition, not all organisations need to be in level 5 or the highest level attainable. They need to check if their current level gives them their desired value and then compare their return on investment (in terms of money or customer satisfaction) for moving to a higher level.

Challenges of using maturity models, benchmarking and gap analysis concepts include ensuring quality assessment and issues of flexibility in use. Notwithstanding these limitations, the concepts still appear to be a valid tool for assessing the project management practice and capability in organisations and developing improvement paths.

Implications of this for the research is the need to develop a pilot **project management maturity model** suitable to assess FCDA's current practices, considering both generic and specific aspects of project management required by the organisation.

Benchmarking and gap analysis for this research will be based on comparing FCDA's current practices with best practice definitions of project management knowledge guides and standards rather than other organisation's practices and performances.

4.0 Research Design and Methodology

4.1 Introduction

This chapter describes the project management maturity model developed for the research. It includes the rationale for the selected knowledge areas and maturity levels. The method of organisational survey and data collection are also explained.

4.2 Development of project management maturity model

4.2.1 Definition of maturity levels

The maturity model has five levels as presented in Table 4. They indicate increasing / ascending maturity in project management capability of an organisation. The maturity levels' definitions follow that of SEI's CMM and have been developed through lessons learnt from OGC's P3M3 (2006); Crawford, (2006); Levin et al (1999); Remy (1997); Ibbs and Kwak (2004).

Table 4: Project Management Maturity Model – Maturity Levels

Level 1: Initial / Ad-hoc but aware - Individual experience

- The organisation recognises projects and carries them out differently from ongoing operational activities.
- The organisation does not use standard processes and procedures in managing projects.
- Project management processes and procedures is understood by the management of the organisation, but they are not well supported.
- Management of projects and their performance depends on efforts of individual project managers and project sponsors.

Level 2: Repeatable / Basic

- The organisation uses basic processes and procedures for most of their projects.
- Efforts are made in documentation of project management processes and procedures but it is not consistent.
- Basic project management processes and procedures are used by the organisation repeatedly from project to project.
- However, there is difficulty in managing projects when a project does not conform to its existing basic processes.

Level 3: Defined / Established - organisational

- The organisation has a structured PM process and procedure with improved standards.
- Standardised management methodologies are used in managing majority of projects and programmes.
- The project management process and procedures are well documented and are used with management support.
- The organisation understands that projects are different in nature, so it tailors the management of projects to suit relevant aspects of its project management process and procedures.

Level 4: Managed / comprehensive – organisational

- The organisation has well advanced and fully implemented project management processes, procedure and standards.
- The organisation has the capacity to evaluate and measure its project management performance on projects.
- The organisation's projects and programmes are aligned to its corporate strategy. They are also integrated to other organisational procedures and policies.
- The management and employees supports and use the organisation's well understood and controlled project management process and procedures.

Level 5: Optimised / Best practice – continuous improvement

- The organisation enables continuous improvement of project management processes, procedures and standards.
- The organisation uses its performance evaluation and measurement to learn and improve future project performance.
- The organisation maintains a high standard in managing projects and deals with them proactively to prevent project failure.

4.2.2 Criteria for selection of project management knowledge areas

The APM BoK is used as a guide because findings in literature review suggest that it appears to be closer to describing knowledge, skills and behaviours for organisational project management. For example, it includes topics that deal with the strategic relationship of projects and programmes with an organisation's objectives and functional activities.

Criteria for selection of the topics is based on those that project and programme management professionals 'strongly agree' are required for successful project and programme management. This list is taken from a modified crude analysis presented in the study by Morris et al (2006) on the responses of professionals interviewed / involved during the research on the updating of the APM BoK 4th edition (2000) to produce the APM BoK 5th edition (2006). Full analysis of the rationale and criteria is attached in Appendix C. The weighted average figures for the professionals' responses to 'construction (building)' sector and 'government' sector sections were taken out for the analysis. This is in consideration that the model is for FCDA - a government organisation mainly operating in the construction sector. Then, the average for project management responses and programme management responses was established. Only the top ranking topics scoring 90% have been selected due to limitations in size of the proposed research. Some topics appear combined because of their similarities and overlapping content. The researcher also selected some topics subjectively, e.g. project office, because of their perceived importance to project management in the Nigerian environment. The list of selected topics is presented in Table 5.

This criteria is justified because application of project and programme management should be modified to reflect differences across industries and sectors, and within organisations and project environments (Shenhar and Dvir, 2004; Morris, 2003; Cooke – Davies, 2004a). One criticism may be identified if considering the limitations of the research as described by Morris et al (2006) for the updating of the APM BoK, such as the somewhat freezing of the existing structure and proposed gradual release of the updated version.

Interestingly, the core knowledge areas detailed in the PMBOK appear in the proposed list, which should allow a more objective definition and analysis. The description of the 'key process areas' of OGC's P3M3 will also suit the research methodology because the P3M3 uses aspects of the CMM for its guidance, which is also used in the model developed.

Table 5: List of Project Management Knowledge Area topics selected for 'Project Management Maturity Model'

S/No.	APM BoK No.	LIST OF SELECTED TOPICS
		Section 2: Planning the strategy
1	2.1	Project success criteria and benefits management
2	2.2	Stakeholder Management
3	2.3	Value Management
4	2.4	Project Management Plan
5	2.5	Project Risk Management
6	2.6	Project Quality Management
7	2.7	Health, safety and environmental management
		Section 3: Executing the strategy
8	3.1	Scope Management
9	3.2	Scheduling
10	3.3	Resource Management
11	3.4	Budgeting & Cost Management
12	3.5	Change Control
13	3.7	Information Management and reporting
		Section 4: Techniques
14	4.3	Estimating
		Section 5: Business and commercial
15	5.4	Procurement
16	5.5	Legal Awareness
		Section 6: Organisation and Governance
17	6.1	Project life cycles
18	6.7	Organization Structure
		Section 7: People and the profession
19	7.1	Communication
20	7.5	Negotiation
21	7.6	Human Resource Management
		Section 1: Project management in context
SA	1.6	Project Office
SA	1.2	Program Management
SA	1.1	Project Management
SA: To provide a summary of project management practice at the end of the maturity model		
		Additional topics not part of maturity model, but considered for data collection
SA	5.1	Business Case
SA	5.3	Project financing and funding
SA	7.2	Teamwork
SA	7.8	Learning and development
SA: Not included in maturity model. But included in data collection process to provide critical information for analysis of findings		

4.2.3 The 'Project Management Maturity Model'

The 'Project Management Maturity Model' for topics 1 – 6 (see Table 5 above) is presented in Appendix D. Definitions and descriptions are first provided. Then the topics are mapped and described into the maturity levels to show how organisations perform within them. The models for other selected topics are not included due to space/research limitations. However, the maturity level definitions (in Table 4) will provide a generic basis and guide for mapping FCDA's existing practices into the models because there is an easily noticeable difference in trend of capabilities for each level.

4.3 Method of data collection and organisational survey

The research adopts a case study approach with qualitative research methodology.

4.3.1 Semi – structured interviews

Although structured questions were prepared, a **semi-structured interview approach** was followed. This is because semi-structured interviews are suitable for interviewing respondents that are experienced (Merton and Kendal, 1946) while also allowing the use of 'open' and 'closed' ended questioning, probing and obtaining detailed, sensitive and quality information (Naoum, 1998). This method enabled interviewees' freedom to explain the processes and procedures used in their departments / organisation so that the researcher can easily match how they relate to the topics analysed. This method appears to be appropriate for the nature of the detailed case study research and data collection process.

The interview questionnaire structure is presented in Appendix E. The questions are grouped into four sections. Section A aims to understand the 'Personal Background' of the interviewee. Section B asks 'General Organisational Information' questions on FCDA to have a good understanding of the organisation. Section C on 'Project Management Maturity' contains questions required to determine FCDA's maturity levels and establish the importance of topics. The questions were designed to reflect the contents of the maturity model. Section D seeks to collect additional information on FCDA's project management practice and barriers to a structured approach. The interviewing styles were flexible to get maximum effectiveness. As a result, not all questions were covered in all interviews.

4.3.2 Collection of supporting documents

Some of FCDA's documentation on policies, procedures, etc were also collected and reviewed to support information collected.

4.4 Research sample

Due to the nature of the research, it was necessary to gain senior management approval to allow easy access to critical information. Approval was given for the research with support and release of information required from departments to ensure that the research objectives were met.

The primary source of data for the research came from **personal and group interviews** with twenty-one (21) management staff of FCDA spread across all the departments. This is because focus was on the employees who are expected to have the greatest responsibility and impact on both programme and project management, rather than just project management.

Three (3) of seven (7) Department Directors; seventeen (17) of thirty-three (33) Deputy Directors; and one (1) Chief Town Planner were interviewed. Of these, a group interview was conducted with one of the departments, involving one (1) Director and eight (8) Deputy Directors. On average, interviewees had over 20 years experience. They have also received training both in Nigeria and overseas.

Interviewees focused on describing practices used or observed in their existing or most recent projects (and programmes), organisational policies, standards, procedures and facilities. Although all departments were covered, emphasis was placed on those that were more involved in project management.

The period of data collection was between 23rd June – 21st July 2008. A pilot interview was conducted with two Deputy Directors to determine the suitability of the interview structure within FCDA. The structure was revised to suit comments that were made while also ensuring that the aim of the data collection process will be met. These exploratory sessions also enhanced selective sampling of interviewees.

The primary research process involved (1) preliminary interviews and data collection, (2) initial assessment and appraisal of results, and (3) then verification and reconfirmation of results with FCDA. Long hand notes were taken for all interview sessions, while tape recording was allowed for some interviews. The personal interviews lasted an average of 1:15 hours each, while the group interview lasted 3:30 hours. Due to confidentiality reasons, comments from the interview sessions used in this report will not be linked to the interviewees.

5.0 Case study

5.1 Description and background of FCDA

FCDA is a government organisation responsible for development projects in the Federal Capital Territory (FCT), Abuja, Nigeria. The organisation has evolved since its creation in 1976, with the following revised responsibilities as at 2004:

(a) 'Provision of engineering infrastructure to the Federal Capital City (FCC).

(b) Provision of public buildings for Government organisations.

(c) Urban and regional planning of the city and the FCT.

(d) Valuation and payment of compensation to displaced communities.

(e) Macro survey activities.' (Alhassan, 2008).

FCDA operates under the Federal Capital Territory Administration (FCTA) headed by the Minister, Federal Capital Territory (FCT) under delegation of the President of the Federal Republic of Nigeria.

5.2 Organisation structure of FCDA

Figure 5 shows the organisation structure of FCDA's departments and divisions. The Executive Secretary runs the day-to-day activities. The organisation comprises seven departments. Directors head the Departments, while Deputy Directors head Divisions. Divisions are broken down into Sections headed by Assistant Directors, while a group of Units make up a Section. Chief Officers, who are professionals in a particular field, head Units relating to that field.

As at May 2008, the organisation comprised of **1,705 employees**.

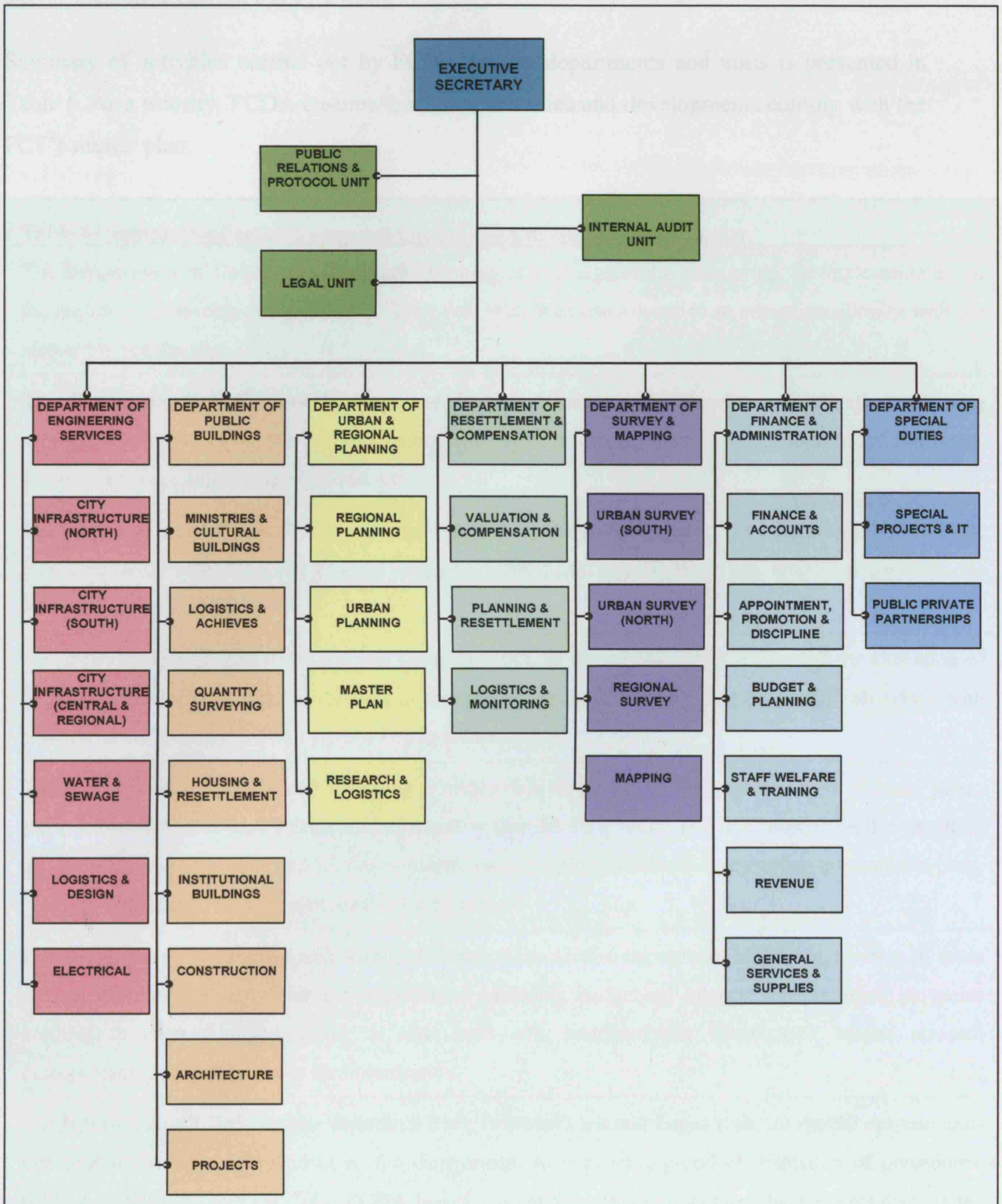

Figure 5: Organisation structure of FCDA

Source: Executive Secretary's office, FCDA (2008)

5.3 Activities carried out by FCDA

Summary of activities carried out by FCDA and its departments and units is presented in Table 6. As a priority, FCDA ensures that all its activities and developments comply with the FCT's master plan.

Table 6: Summary of activities carried out in FCDA departments and units

The **Department of Urban and Regional Planning** is in charge of the monitoring the implementation of the master plan developed for the FCT. They deal with land use allocation to ensure conformity with the master plan of the city.
The **Department of Engineering Services** is responsible for the development of all engineering infrastructure services in the FCT in accordance with the master plan. These projects are for roads, sewage, drainage, telecommunications, etc.
The **Department of Public Buildings** is responsible for the development of all public buildings in FCT. Public buildings refer to buildings to be used by governmental organisations, e.g. ministries, agencies, etc that are to operate in FCT.
The **Department of Resettlement and Compensation** is responsible for dealing with re–allocation of people who are affected by development of districts and areas in the FCT. The department also deals with compensation for people to be displaced by development.
The **Department of Survey and Mapping** is responsible for providing basic tools in form of maps, plans, etc to other technical departments and agencies within the FCT. They are also responsible for checking and detailing any land allocated for development. Project activities include demarcating the land into plots, production of maps, establishment of fixed controls, etc.
The **Department of Finance and Administration** is the service department in the organisation. It takes care of all financial issues for the organisation including budgeting, internal remuneration, payments certified to external organisations. It also deals with administrative issues such human resource management, purchases, etc for the organisation.
The **Internal Audit Unit**, **Public Relations Unit**, **Protocol Unit** and **Legal Unit** are special purpose units that provide services independent of the departments such as vetting and confirmation of procedures, publicity, contracts law, etc. **The FCDA board** has eight members appointed by the President of the Federal Republic of Nigeria. The Minister of the FCT is the Chairman of the Board. The **Department of Special Duties** is a purpose made department within the Office of the Executive Secretary.

The above descriptions indicate that the departments of engineering services, public buildings, and resettlement and compensation are mainly involved in managing projects. The departments of urban & regional planning and mapping & survey require a combination of operational management and project management aligned to that of other departments. Only the department of finance and administration carry out mainly operational management. However, they also require project management because of the need to align their finance, budgeting and administrative processes with projects carried out by other departments.

There was a general agreement in interviews conducted that on average FCDA carries out between 60 – 80% project activities as compared to 20 – 40% operational or functional activities in terms of cost of operations, time spent on activities, and volume of work done. This estimate varies within individual departments. For example, consensus reached in the Department C was that:

> *"In summary, an average ratio is about 80% for projects and 20 % for functional activities. Majority of administrative work carried out here is for project administration."*

Although FCDA has its own 'in- house project professionals', it outsources some services to **external 'consultants'** and **'contractors'**. Contractors are always used for construction and engineering works, supply of components and consumables and other services. Consultants are usually involved when the project or service is too large, complex or time constrained. Majority of design works are outsourced, while FCDA usually carry out project supervision.

The bulk of FCDA's **funding** comes from the Federal Government through its parent organisation, FCTA. The first source is a national budgetary allocation, while the second is a statutory allocation. Some funding also comes from external sources as intervention funds from foreign aids, private sector and non – governmental organisations.

Additional descriptive information on FCDA is included in Appendix F.

This case study description indicates that, FCDA is an organisation that should have high-level core competency in the management of projects and indeed be more project based. This makes FCDA suitable and representative for the research objectives, which aims to investigate how public sector organisations in Nigeria apply project management practices. The research methodology developed also appears suitable, considering that the criteria for topics selected for analysis is on a combination of the construction and government sectors.

6.0 Research findings and analysis

6.1 Scope of the chapter

This chapter presents results of the project management maturity assessment carried out on FCDA. Thereafter, gap analysis was carried out to identify strengths, weaknesses and improvement areas. Discussion and analysis is provided for 10 key areas identified for improvement.

6.2 Presentation of results of project management maturity assessment

Rather than analysing individual responses of interviewees, or individual departments within FCDA, a consensus and general approach has been used to make the analysis and discussion of the results more presentable and concise. This approach is supported by the fact that FCDA's departments use similar processes and procedures, and the activities of the departments are closely interrelated.

Table 7 shows guidance on the four themes used to aid in determining and analysing the maturity levels and discussing the findings. The themes – *Knowledge*, *Tools & Techniques*, *Practices* and *Infrastructure*, are adapted from the four 'enablers' of Lubianiker (2000) which he argued should be used to enhance assessment and improvement indicators in organisations. The approach is justified for this research because a semi structured interview format was used, rather than questionnaires. The average of all four themes gives the maturity level for a particular topic. The results of the project management assessments will follow the description of the themes.

TABLE 7: DESCRIPTION OF DISCUSSION THEMES

Knowledge: This refers to the expertise and awareness that is required for the application of a particular project management processes or knowledge area. It is usually developed through education and working experience of individual employees.

The interviewees are expected to be knowledgeable in a particular topic since they have authority and/or responsibility in that aspect in the organisation more than other people do. Thus, understanding this *level of knowledge* within the organisation compared to best practice guides and standards for the project management topics analysed will serve as an important background for other themes.

Tools and Techniques: Tools and techniques are required by individuals in the organisation to be able to carry out a particular procedure or process effectively and efficiently. For example, tools and techniques for scheduling include the use of network diagrams and Gantt charts; for stakeholder management include using impact/power matrix; for scope management include using work breakdown structure (WBS), etc.

It will be important to understand the type of *tools and techniques* used in the organisation because they indicate the 'hard' aspects of project management practice used.

Practices, Standards and Procedures: These describe the recognised procedures that should guide individuals who carry out a particular project management processes within the organisation. It also refers to the steps that should be carried out in order to execute a project management process. For example, a generic project risk management process in an organisation may involve the procedures of:

- risk strategy development
- risk identification
- risk analysis (quantitative and/or qualitative)
- risk response (avoid, mitigate, absorb, exploit, etc)
- iterative risk control and monitoring

The reason for analysing *practices, standards and procedures* is that it will give an indication of how things are being done in the organisation. It will answer the question of whether they are actually carrying out a particular process, the extent to which they are doing it, whether it is supported by organisational policies, etc. This will allow comparison with established methods suggested in the guides, standards and literature.

Organisational infrastructure: This refers to the basic facilities, equipment, services, etc that form the basis for the organisation's activities, which will also support effective and efficient project management practice. They also include information and communication technology (ICT), adaptability of the organisation structure to suit project contexts, etc.

The reason for considering *organisational infrastructure* is that they directly support the application of a formal project management practice and aid improvement initiatives.

Source: themes adapted from Lubianiker (2000) and elaborated to suit the research

6.2.1 *Project success and benefit management*

Figure 6.1 shows project management maturity (PMM) assessment results for 'Project success and benefit management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
1	**2.1**	**Project success and benefit management**	**1.5**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices	1				
		Infrastructure		2			

Comments: FCDA's *knowledge* and *organisational infrastructure* in project success and benefit management are on level 2 – Repeatable / Basic. However, *Tools and Techniques* and *Practices, Standards and Procedures* are on level 1 – Initial. Thus, *average maturity level* in project success and benefit management is 1.5.

Figure 6.1: Maturity level for project success and benefit criteria

6.2.2 *Stakeholder management*

Figure 6.2 shows PMM assessment results for 'Stakeholder management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
2	**2.2**	**Stakeholder management**		**2**			
		Knowledge		2			
		Tools and Techniques		2			
		Practices		2			
		Infrastructure		2			

Comments: All themes for FCDA's stakeholder management practice are on level 2 – Repeatable / Basic. Thus, *average maturity level* in stakeholder management is 2.0.

Figure 6.2: Maturity level for stakeholder management

6.2.3 *Value management*

Figure 6.3 shows PMM assessment results for 'Value management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
3	**2.3**	**Value management**	**1.25**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices	1				
		Infrastructure	1				

Comments: Only the *knowledge* theme is on level 2. The other themes are on level 1. Thus, *average maturity level* in value management is 1.25.

Figure 6.3: Maturity level for value management

6.2.4 *Project management plan (PMP)*

Figure 6.4 shows PMM assessment results for 'Project management plan'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
4	**2.4**	**Project management plan (PMP)**	**1.5**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices	1				
		Infrastructure		2			

Comments: FCDA's *knowledge* and *organisational infrastructure* in PMP are on level 2 – Repeatable / Basic. However, *Tools and Techniques* and *Practices, Standards and Procedures* are on level 1 – Initial. Thus, *average maturity level* in PMP is 1.5.

Figure 6.4: Maturity level for project management plan

6.2.5 *Project risk management*

Figure 6.5 shows PMM assessment results for 'Project risk management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
5	**2.5**	**Project risk management**	**1.25**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices	1				
		Infrastructure	1				

Comments: Only the *knowledge* theme is on level 2 for project risk management. The other themes are on level 1. Thus, *average maturity level* is 1.25.

Figure 6.5: Maturity level for project risk management

6.2.6 *Project quality management*

Figure 6.6 shows PMM assessment results for 'Project quality management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
6	**2.6**	**Project quality management**		**2.75**			
		Knowledge				4	
		Tools and Techniques		2			
		Practices			3		
		Infrastructure		2			

Comments: FCDA's *knowledge* on quality management is high at level 4. Practices and procedures is on level 3. *Organisational infrastructure* and Tools and Techniques are on level 2. Thus, *average maturity level* in PMP is 2.75.

Figure 6.6: Maturity level for project quality management

6.2.7 *Health, safety and environmental management*

Figure 6.7 shows PMM assessment results for 'Health, safety and environmental management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
7	**2.7**	**Health, safety and environmental management**		**2.25**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices		2			
		Infrastructure		2			
Comments: FCDA's *knowledge* on health, safety and environmental management is on level 3. Other themes are on level 2. Thus, *average maturity level* is 2.25.							

Figure 6.7: Maturity level for Health, safety and environmental management

6.2.8 *Scope management*

Figure 6.8 shows PMM assessment results for 'Scope management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
8	3.1	**Scope management**	**1.75**				
		Knowledge			3		
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				
Comments: FCDA's *knowledge* on scope management is on level 3; *practices* on level 2. However, *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.75.							

Figure 6.8: Maturity level for scope management

6.2.9 *Scheduling*

Figure 6.9 shows PMM assessment results for 'Scheduling'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
9	3.2	**Scheduling**	**1.75**				
		Knowledge			3		
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				
Comments: FCDA's *knowledge* on scheduling is on level 3; *practices* on level 2. However, *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.75.							

Figure 6.9: Maturity level for scheduling

6.2.10 Resource management

Figure 6.10 shows PMM assessment results for 'Resource management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
10	3.3	**Recourse management**	**2.00**				
		Knowledge			3		
		Tools and Techniques	1				
		Practices			3		
		Infrastructure	1				

Comments: FCDA's *knowledge* and *practices* on resource management is on level 3; However, both *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 2.00.

Figure 6.10: Maturity level for resource management

6.2.11 Budgeting and cost management

Figure 6.11 shows PMM assessment results for 'Budgeting and cost management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
11	3.4	**Budgeting and cost management**		**2.25**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices		2			
		Infrastructure		2			

Comments: FCDA's *knowledge* on budgeting and cost management is on level 3. The remaining themes are all on level 2. Thus, *average maturity level* is 2.25.

Figure 6.11: Maturity level for budgeting and cost management

6.2.12 Change control

Figure 6.12 shows PMM assessment results for 'Change control'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
12	3.5	**Change control**		**1.75**			
		Knowledge			3		
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				

Comments: FCDA's *knowledge* on change control is on level 3. *Practices* are on level 2, while both *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.75.

Figure 6.12: Maturity level for change control

6.2.13 Information management and reporting

Figure 6.13 shows PMM assessment results for 'Information management and reporting'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
13	3.7	**Information management and reporting**	**1.75**				
		Knowledge			3		
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				

Comments: FCDA's *knowledge* on Information management and reporting is on level 3. *Practices* are on level 2, while both *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.75.

Figure 6.13: Maturity level for Information management and reporting

6.2.14 Estimating

Figure 6.14 shows PMM assessment results for 'Estimating'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
14	4.3	**Estimating**	**1.5**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				

Comments: FCDA's *knowledge* and *practices* on estimating are on level 2; However, both *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.5.

Figure 6.14: Maturity level for Estimating

6.2.15 Procurement

Figure 6.15 shows PMM assessment results for 'Procurement'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
15	5.4	**Procurement**		**2.5**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices			3		
		Infrastructure		2			

Comments: FCDA's *knowledge* and *practices* on procurement are on level 3; However, both *tools and techniques* and *infrastructure* are on level 2. Thus, *average maturity level* is 2.5.

Figure 6.15: Maturity level for Procurement

6.2.16 *Legal awareness*

Figure 6.16 shows PMM assessment results for 'Legal awareness'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
16	5.5	**Legal awareness**		**2.5**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices			3		
		Infrastructure		2			
Comments: FCDA's *knowledge* and *practices* on legal awareness are on level 3; However, both *tools and techniques* and *infrastructure* are on level 2. Thus, *average maturity level* is 2.5.							

Figure 6.16: Maturity level for Legal awareness

6.2.17 *Project life cycles*

Figure 6.17 shows PMM assessment results for 'Project life cycles'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
17	6.1	**Project life cycles**		**2**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices		2			
		Infrastructure	1				
Comments: FCDA's *knowledge* on project life cycles is on level 3. *Practices* and *tools and techniques* are on level 2, while *infrastructure* is on level 1. Thus, *average maturity level* is 2.0.							

Figure 6.17: Maturity level for project life cycles

6.2.18 *Organisation structure*

Figure 6.18 shows PMM assessment results for 'Organisation structure'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
18	6.7	**Organisational structure**	**1.75**				
		Knowledge			3		
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				
Comments: FCDA's *knowledge* on organisation structure is on level 3. *Practices* are on level 2, while both *tools and techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.75.							

Figure 6.18: Maturity level for organisation structure

6.2.19 Communication

Figure 6.19 shows PMM assessment results for 'Communication'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
19	7.1	**Communication**	**1.75**				
		Knowledge			3		
		Tools and Techniques	1				
		Practices		2			
		Infrastructure	1				
Comments: FCDA's *knowledge* on communication is on level 3. *Practices* are on level 2, while both *tools & techniques* and *infrastructure* are on level 1. Thus, *average maturity level* is 1.75.							

Figure 6.19: Maturity level for communication

6.2.20 Negotiation

Figure 6.20 shows PMM assessment results for 'Negotiation'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
20	7.5	**Negotiation**		**2**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices		2			
		Infrastructure	1				
Comments: FCDA's *knowledge* on negotiations is on level 3. *Practices* and *tools and techniques* are on level 2, while *infrastructure* is on level 1. Thus, *average maturity level* is 2.0.							

Figure 6.20: Maturity level for negotiation

6.2.21 Human resource management

Figure 6.21 shows PMM assessment results for 'Human resource management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
21	7.6	**Human recourse management**		**2.5**			
		Knowledge			3		
		Tools and Techniques		2			
		Practices			3		
		Infrastructure		2			
Comments: FCDA's *knowledge* and *practices* on human resource management are on level 3; However, both *tools and techniques* and *infrastructure* are on level 2. Thus, *average maturity level* is 2.5.							

Figure 6.21: Maturity level for human resource management

6.2.22 *Project office*

Figure 6.22 shows PMM assessment results for 'Project office'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
SA	1.6	**Project Office**	**1.25**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices	1				
		Infrastructure	1				
Comments: Only the *knowledge* theme is on level 2 for project office. The other themes are on level 1. Thus, *average maturity level* is 1.25.							
Figure 6.22: Maturity level for project office							

6.2.23 *Programme management*

Figure 6.23 shows PMM assessment results for 'Programme management'.

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
SA	1.2	**Programme management**	**1.25**				
		Knowledge		2			
		Tools and Techniques	1				
		Practices	1				
		Infrastructure	1				
Comments: Practices, tools & techniques and infrastructure are on level 1. However, *knowledge* is on level 2. Thus, *average maturity level* for programme management is 1.25.							
Figure 6.23: Maturity level for programme management							

6.2.24 *Project management*

The average values for each of the four themes for the 21 project management topics have been taken to derive the general project management maturity level. The breakdown is presented in Figure 6.24. Project office and programme management have been excluded from this calculation because they are taken as stand-alone topics.

Thus, as illustrated in Figure 6.25, the *average project management maturity level* of FCDA is 1.92. Average value for *knowledge* theme is level 2.76, while *practices* are on level 2.05. Both *tools & techniques* and *infrastructure* are on level 1.43.

SUMMARY BREAKDOWN OF RESULTS OF PROJECT MANAGEMENT MATURITY ASSESSMENT ACROSS DISCUSSION THEMES

S/No.	APMBOK No	LIST OF SELECTED TOPICS	MATURITY LEVEL OF DISCUSSION THEMES				
			Knowledge (level)	Tools & Techniques (level)	Practices (level)	Infrastructure (level)	Average (level)
		Section 2: Planning the strategy					
1	2.1	Project success criteria and benefits management	2	1	1	2	1.50
2	2.2	Stakeholder Management	2	2	2	2	2.00
3	2.3	Value Management	2	1	1	1	1.25
4	2.4	Project Management Plan	2	1	1	2	1.50
5	2.5	Project Risk Management	2	1	1	1	1.25
6	2.6	Project Quality Management	4	2	3	2	2.75
7	2.7	Health, safety and environmental management	3	2	2	2	2.25
		Section 3: Executing the strategy					
8	3.1	Scope Management	3	1	2	1	1.75
9	3.2	Scheduling	3	1	2	1	1.75
10	3.3	Resource Management	3	1	3	1	2.00
11	3.4	Budgeting & Cost Management	3	2	2	2	2.25
12	3.5	Change Control	3	1	2	1	1.75
13	3.7	Information Management	3	1	2	1	1.75
		Section 4: Techniques					
14	4.3	Estimating	2	1	2	1	1.50
		Section 5: Business and commercial					
15	5.4	Procurement	3	2	3	2	2.50
16	5.5	Legal Awareness	3	2	3	2	2.50
		Section 6: Organisation and Governance					
17	6.1	Project life cycles	3	2	2	1	2.00
18	6.7	Organization Structure	3	1	2	1	1.75
		Section 7: People and the profession					
19	7.1	Communication	3	1	2	1	1.75
20	7.5	Negotiation	3	2	2	1	2.00
21	7.6	Human Resource Management	3	2	3	2	2.50
		SUMMARY					
		Section 1: Project management in context					
SA	**1.1**	**Project Management**	**2.76**	**1.43**	**2.05**	**1.43**	**1.92**
SA	1.6	Project Office	2	1	1	1	1.25
SA	1.2	Programme Management	2	1	1	1	1.25

Figure 6.24: Summary breakdown of results of Project Management Maturity assessment across discussion themes

S/No.	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 Initial / Ad-hoc but aware - Individual experience	LEVEL 2 Repeatable / Basic	LEVEL 3 Defined / Established - organisational	LEVEL 4 Managed / Comprehensive - organisational	LEVEL 5 Optimised / Best practice – continuous improvement
1	1.1	**Project management**	**1.92**				
		Knowledge		2.76			
		Tools and Techniques	1.43				
		Practices		2.05			
		Infrastructure	1.43				

Comments: FCDA's average on project management *knowledge* theme is on level 2.76, while *practices* are on level 2.06. However, both *tools and techniques* and *infrastructure* are on level 1.43. Thus, *average project management maturity level* is 1.92.

Figure 6.25: Maturity level for project management

The maturity level of 1.92 shows that FCDA lies within level 1 (Initial / Adhoc but aware), but much closer to level 2 (Repeatable / Basic). This suggests that FCDA recognises and understands projects and manages them differently from operational activities. The results indicate that project management processes and procedures are understood but they are not fully supported as a way of operating within the organisation. The results also show that FCDA more or less has the ability to carry out basic project management processes repeatedly, but not in a structured and controlled form.

This answers the research questions regarding the extent to which public sector organisations in Nigeria accord to established project management practices. The gap analysis section will discuss and analyse selected results from the project management topics in detail.

The explanation for this trend in the four themes is perhaps because the senior management of FCDA who were interviewed for this research have gained knowledge through experience and education in managing projects. This has been reflected in a higher score of 2.76 for *knowledge* theme compared to other themes. At 2.05, *practices* score lower than *knowledge*, but higher than *tools & techniques* and *infrastructure* (both at 1.43).

This suggests that the lessons learnt and knowledge gained has been introduced into FCDA over time as procedures and standards, even though the tools & techniques and organisational infrastructure are inadequate or have not improved much. In other words, a knowledge 'pull' has influenced FCDA's practices, procedures and standards. This can be reconfirmed by going back to Table 6.24, which shows that in all topics analysed, knowledge theme scores higher then the other themes.

Thus, FCDA is stronger in knowledge, followed by practices, compared to tools & techniques and infrastructure in project management maturity. This also suggests that FCDA is performing below its knowledge capacity and does not have the adequate techniques and environment to support them.

In terms of the project management topics, FCDA scored highest in project quality management with a level 2.75, followed by procurement, legal awareness, and human resource management, which all scored 2.50. However, value management, project risk management, project office and programme management all scored lowest with 1.25.

6.3 Gap analysis: identifying key areas for organisational improvement

Because FCDA has a lower maturity level in some topics, it does not mean they have to improve them as priority over others. For example, contractors are responsible for preparing detailed project schedules as part of proposals for construction projects, which FCDA checks to ensure that it suits its expected requirements and timeframe. Although, FCDA also requires scheduling for its own internal projects, the importance of this is lower than that of say procurement, which is one of the single most important activities they require.

These levels of importance were established during the interviews and data collection sessions. As presented in Table 8, procurement, project funding & financing, and project management are the most important topics required. Value management, scheduling, resource management, estimating, and health & safety are less important then other topics.

TABLE 8: WEIGHING MATRIX FOR IMPORTANCE OF PROJECT MANAGEMENT KNOWLEDGE AREAS TO FCDA

KEY

1 = Not important
2 = Good to have
3 = Important
4 = Very important
5 = Cannot do without it

S/No.	APMBoK No	LIST OF SELECTED TOPICS	IMPORTANCE MATRIX				
			1	2	3	4	5
		Section 2: Planning the strategy					
1	2.1	Project success criteria and benefits management				4.5	
2	2.2	Stakeholder Management				4	
3	2.3	Value Management			3.5		
4	2.4	Project Management Plan				4.5	
5	2.5	Project Risk Management				4	
6	2.6	Project Quality Management				4	
7	2.7	Health, safety and environmental management			3.5		
		Section 3: Executing the strategy					
8	3.1	Scope Management				4.5	
9	3.2	Scheduling			3.5		
10	3.3	Resource Management			3.5		
11	3.4	Budgeting & Cost Management				4.5	
12	3.5	Change Control				4	
13	3.7	Information Management				4	
		Section 4: Techniques					
14	4.3	Estimating			3.5		
		Section 5: Business and commercial					
15	5.4	Procurement					5
16	5.5	Legal Awareness				4	
		Section 6: Organisation and Governance					
17	6.1	Project life cycles				4	
18	6.7	Organization Structure				4.5	
		Section 7: People and the profession					
19	7.1	Communication				4.5	
20	7.5	Negotiation				4	
21	7.6	Human Resource Management				4.5	
		Section 1: Project management in context					
SA	1.6	Project Office				4	
SA	1.2	Program Management				4.5	
SA	1.1	Project Management					5
		Additional topics not part of maturity model, but considered for data collection					
SA	5.1	Business Case				4	
SA	5.3	Project financing and funding					5
SA	7.2	Teamwork				4	
SA	7.8	Learning and development				4.5	

It appears clear that one challenge is to understand where an organisation's maturity level is. Another challenge is to determine where improvement should be focused on. Arguments identified in literature review are that not all aspects should be improved, but improvement should be focused on those areas that are critical to the organisation's activities. This is one of the advantages of gap analysis, which counters some limitations of using the maturity models.

The approach used here is to take the reverse scores of the project management maturity assessment on one side (i.e. '5' representing maximum score obtainable in the maturity model *minus* the actual maturity level obtained in a particular topic) to indicate the 'gap' in practice. These are then multiplied by the level of importance as weighing factors.

Table 9 presents results of the calculations, which shows FCDA's key areas for improvement, arranged in descending order of importance/priority. It indicates that programme management; project success criteria and benefits management; project management plan; and project management are the top four areas that FCDA should focus on. Resource management; legal awareness; health and safety and environmental management; and quality management were on the lower side of the spectrum.

It is worthy of mention that gap analysis involves identifying the difference in between existing/current practice and best practice. This priority determination or calculation, is only expected to guide organisations to focus on which areas are perhaps more critical.

The top 10 topics identified as key for improvement will now be discussed. Focus will be on the findings of the interview and data collection sessions and comparison between FCDA's current practice and the best practice in project and programme management guides and standards. This will give a clearer indication on where FCDA presently lies and what they should be doing, thereby enabling implications and conclusions to be drawn. Not all topics are discussed due to space limitations.

TABLE 9: PRIORITY OF PROJECT MANAGEMENT TOPICS REQUIRING IMPROVEMENT IN FCDA

S/No.	APM BoK No.	LIST OF SELECTED TOPICS	1 MATURITY LEVEL (1)	2 REVERSE MATURITY LEVEL (GAP) (2) = Level 5 - (1)	3 WEIGHING FACTOR (3)=see table 7	4 INDEX OF KEY AREAS TO IMPROVE (4) = (2) x (3)
SA	1.2	Program Management	1.25	3.75	4.50	16.88
1	2.1	Project success criteria and benefits management	1.50	3.50	4.50	15.75
4	2.4	Project Management Plan	1.50	3.50	4.50	15.75
SA	1.1	Project Management	1.92	3.08	5.00	15.42
5	2.5	Project Risk Management	1.25	3.75	4.00	15.00
SA	1.6	Project Office	1.25	3.75	4.00	15.00
8	3.1	Scope Management	1.75	3.25	4.50	14.63
18	6.7	Organization Structure	1.75	3.25	4.50	14.63
19	7.1	Communication	1.75	3.25	4.50	14.63
3	2.3	Value Management	1.25	3.75	3.50	13.13
12	3.5	Change Control	1.75	3.25	4.00	13.00
13	3.7	Information Management	1.75	3.25	4.00	13.00
15	5.4	Procurement	2.50	2.50	5.00	12.50
11	3.4	Budgeting & Cost Management	2.25	2.75	4.50	12.38
14	4.3	Estimating	1.50	3.50	3.50	12.25
2	2.2	Stakeholder Management	2.00	3.00	4.00	12.00
17	6.1	Project life cycles	2.00	3.00	4.00	12.00
20	7.5	Negotiation	2.00	3.00	4.00	12.00
9	3.2	Scheduling	1.75	3.25	3.50	11.38
21	7.6	Human Resource Management	2.50	2.50	4.50	11.25
10	3.3	Resource Management	2.00	3.00	3.50	10.50
16	5.5	Legal Awareness	2.50	2.50	4.00	10.00
7	2.7	Health, safety and environmental management	2.25	2.75	3.50	9.63
6	2.6	Project Quality Management	2.75	2.25	4.00	9.00
		Additional topics not part of maturity model, but considered for data collection				
SA	5.1	Business Case	No score		4.00	
SA	5.3	Project financing and funding	No score		5.00	
SA	7.2	Teamwork	No score		4.00	
SA	7.8	Learning and development	No score		4.50	

6.3.1 Project success and benefits criteria (Gap: 3.50)

There is evidence that project success and benefits are given consideration at organisational level in FCDA. There is general knowledge on factors affecting success of projects, which are usually tied to cost, time and quality parameters. There was a general agreement amongst interviewees on this issue. A Deputy Director in Department B commented that:

> *"Yes, benefits are considered for projects. The department also identifies what will determine success of projects.....".*

Another Deputy Director in Department C mentioned that:

> *"There has to be a benefit linked to a project. Normally, there has to be a justification for projects proposed to the higher hierarchical levels in Government. We are expected to defend the proposal for our projects by showing the reason and benefits for the project, what will be gained .....".*

This also reflects how business cases for development projects are developed out of the master plan of the FCT. Some success factors and issues are considered during planning of projects. However, there is no standard *practice or procedure* within the organisation followed for establishing, detailing and managing success factors for projects. Again, there is no benefits management strategy to monitor and manage benefits throughout the project life cycle. The existing practices are usually done on an adhoc level.

Tools and techniques such as key performance indicators (KPIs) or critical success factors (CSFs) are not used. The use of KPIs will enable FCDA to measure progress and performance against objectives agreed with project stakeholders, while CSF will enable the project sponsor and project managers have better understanding of areas to focus on to achieve project objectives.

Basic *infrastructure* required for project success and benefits management are available. Important here is the general project information relating to project progress, which can also be used to identify and monitor KPIs and CSFs. However, there are barriers of difficulty in accessing information and limitations of ICT. It appears that the major project funding issues experienced by FCDA also affects its ability to sustain a project success and benefits management practice.

6.3.2 *Value management* (Gap: 3.75)

FCDA is aware and *knowledgeable* on project value concept. Soft value management is carried out at strategic level and during project definition and planning stages mainly by considering cost estimates against the functions and benefits of the project components. Stakeholders are involved during planning processes to enhance value planning when the need arises.

During project implementation, efforts are made to reduce cost, and if possible enhance performance or functionality, with the involvement of the project team. However, 'hard' value management *practices (i.e. techniques)* such as value engineering and value analysis are not well articulated. For example, concepts of function analysis system technique (FAST) diagramming, function analysis, etc is not carried out. A Deputy Director in Department G indicated that:

> *"We consider value management during project planning and during implementation of projects. Costs are considered and then compared to the function it is to perform. For example, during the design of a pipeline, we make sure there are various alternatives considered and compared. With that, we can take the alternative that balances both function and cost. This practice is mainly based on the experience of senior employees."*

There was no evidence of a *structured or standardised procedure* for value management and its performance was based on efforts of several senior employees knowledgeable in the procedure. *Organisational infrastructure* and support available in meeting needs of a value management practice was low or inadequate. FCDA will benefit from value management, especially value engineering if supported at all levels in the organisation.

6.3.3 *Project management plan (PMP)* (Gap: 3.50)

The interviews showed that FCDA is as *knowledgeable* of some of the components of a PMP, such as project scope, cost budgets, time schedules, expected roles and responsibilities of project team members as evident in the maturity levels established.

However, project and programme managers do not use a PMP as a *standard document or practice*. *Infrastructure* for developing and operating PMP is moderately available. In particular, the comprehensive individual project files used by FCDA for these PMP components will serve as information base, which can be used to prepare and update project

plans and monitor project progress against such plans. FCDA will gain from the use of a standardised PMP format (used on individual projects and easily combined for programme of projects) as a reference point for the project manager, project sponsor, project team and other stakeholders. It will also serve as a more structured guide for monitoring and control during implementation stages. A Deputy Director in Department E agreed with such benefits commenting that:

> *"We do not use project management plans for managing our projects. But, there will be a lot of benefits if there is such a structured way we can bring together all the information required in managing projects properly as a reference point throughout the project. Presently, there is no real plan document used in the department. However, Departments B and C are better in dealing with project plan information, even though, we do not use project management plans."*

6.3.4 Project risk management (Gap: 3.75)

Interviewees showed good *knowledge* and understanding of the nature of risks affecting FCDA and its projects and programmes. There was evidence to show that project stakeholders are involved in some aspects of managing project risks when they arise.

However, there is no formal risk management *process or practice* with qualitative and quantitative analysis, use of risk register, etc. *Tools and techniques* such as probability/impact matrix are not utilised in analysing risks. Contingencies in monetary terms are normally included in cost estimates and contract sum of projects to cover for unforeseen risks. External consultants and contractors are made aware and involved in managing some aspects of risks. Presently, efforts are being made to improve approach to managing risks. *Organisational infrastructure* will also have to be improved to implement a structured risk management process. A Deputy Director in Department B mentioned that:

> *"Our risk management process is poor or low. Usually, contingencies are provided in cost estimates and contract sums to take care of risks. This is either 10% or 5% depending on the circumstances. For example, during engineering projects, if the terrain is clear, we expect less uncertainty, but if it is rough, there will likely be more uncertainty, meaning more provision for risks".*

During the course of the group interview session in Department C, the interviewees paused to consider some innovative aspects of dealing with one of their major risks. They considered

introducing a way for FCDA to make their agreements with contractors more flexible so that interest in delayed payments by FCDA, which was very rampant, will be reduced, with the aim of getting a win – win solution. It appears clear that a structured risk management process will be very important for FCDA.

6.3.5 Scope management (Gap: 3.25)

Findings of the interviews suggest that FCDA *understands* project scope management. Basic processes and procedures are used in defining project scope. This involves preparing the project brief and incorporating information on the project's purpose, scope and expected outputs. High-level summary of project scope is usually presented to the higher hierarchical Government body for approval of proposed projects. Tendering and contract documents such as bills of quantities, project designs, etc, enable further definition of project scope. However, there is still no formal scope management *process or practice* both at strategic and lower level, but the existing procedures described above are repeatable for all their projects.

No *tools and techniques* such as work breakdown structure (WBS), etc are used internally. External consultants are sometimes involved to establish project scope during project design and planning stages. Contractors are responsible for developing WBS and detailed project scope information (including schedules) after contract award. *Infrastructure* and ICT (especially software tools) are not adequately used for proper scope management internally.

6.3.6 Organisation structure (Gap: 3.25)

FCDA operates a functional matrix organisation structure. This implies that it is more functionally based, but project coordination and project management is recognised. This setup is well understood within the organisation, as there was a general trend in interview responses regarding how the organisation operated.

Interviewees indicated that the nature of bureaucracy in the civil service affects the way the organisation structure operates which in turn affects projects and programmes. This is evident as additional project organisation structures have to be developed for projects carried out by FCDA. This allows project managers (usually Chief Officers or Assistant Directors, depending on project complexity) to be in charge of projects carried out, while reporting to functional managers (usually the Directors and Deputy Directors, who are also project sponsors and usually programme managers). This has been done repeatedly for projects carried out, with recent efforts towards more consistency. It was evident that FCDA has a

good *knowledge* of the organisation structure required for its projects, that it is making considerable efforts in practicing it, but the enabling environment and *organisational setup or infrastructure* to support it is still weak.

Roles and responsibilities of all employees are well defined and established. As a public sector organisation, FCDA and its employees also have to follow Nigeria's Federal Civil Service rules and structure, which does not support project and programme management largely. However, project professionals are also governed by peer groups, i.e. affiliated to professional associations and institutions. Therefore, by abiding to their codes of conduct, etc, they also get the opportunity to develop some competencies and norms within such profession in managing projects.

FCDA's ability to become more project based will enable it operate better in the project and programme management spectrum, because it will be able to tie its projects and programmes to organisational goals and objectives and manage its resources by projects.

6.3.7 Communication (Gap: 3.25)

FCDA appears to *understand* the importance of communication in managing projects. Findings of the interviews suggest that both formal and informal communication practices are employed. The organisation structure has largely influenced the communication channels within FCDA and this is evident in the similar maturity level established. There was also evidence on FCDA's ability to deal with stakeholders, which is reflected in the maturity level of the stakeholder management topic.

The challenge FCDA faces is that there is no *formal or structured practice* of using project communication's plans for its projects. Most project communications rely on progress reporting and distribution of information, which is done as a standard for all projects, repeatedly. However, this is not adequate as a communication plan designed specifically to suit a project context will serve the project's needs better. Such plan will be able to indicate communication requirements, technology to be used and how communication issues will be resolved for projects. ICT as an important *infrastructure* to support communication is currently being improved. Interviewees also indicated that e-government is at preliminary stages of development.

6.3.8 Project office (Gap: 3.75)

Findings of the interviews show that there is general *knowledge and understanding* of some of the functions of a Project Office. All interviewees identified the Project Monitoring Unit (PMU), under the office of the Minister, FCTA as the project office within the overall organisation.

It was established that the main responsibility of the PMU is in providing 'technical assistance' to the Minister's office on projects carried out in the FCT. The unit is made up of adhoc professional staff employed in the Minister's office, rather than permanent staff under the Federal civil service. The PMU does not provide full project management support but rather support in procurement activities extended to all other organisations, departments, parastatals within FCTA (including FCDA). A senior officer in the PMU indicated that:

> *"We provide more of technical assistance rather than monitoring as the name suggests. For us to carry out monitoring, we will have to be able to assess all projects, in terms of resources used for them, compare planned and actual targets; expected outcomes, visit project sites, amongst others. What we actually do involves giving technical advice in procurement activities to ensure that projects of FCTA and organisations within it follow due process, are accountable, transparent, achieve value for money. We also liaise with the Bureau of Public Procurement, monitor decisions affecting FCTA's projects at the Federal level and ensure that Government certification is guaranteed for our projects. Presently, the number of staff and resources available in the unit is not adequate to deal with all the demands of work available, but this issue is being dealt with now."*

This appears to be a *limited function or practice*, thereby implying that there is no office or unit clearly carrying out the functions of an established Project Office within FCDA or FCTA. Presently, the PMU has limited *tools, techniques*, and *infrastructure* in carrying out its functions effectively.

A well-established project office will provide assistance in the practices and procedures for project and programme management in the organisation, training, development of lessons learnt and establishing best practices in FCDA. FCDA will have to consider the expansion of the PMU in the Minister's office or setup a more dedicated project office. The office can also be set up with full commitment to the process of performance improvement within FCDA.

6.3.9 Project management (Gap: 3.08)

This presents a general summary of how project management is carried out within FCDA. FCDA recognises projects and carries them out differently from ongoing activities. There is *reasonable knowledge* within the organisation (especially at management level), which has been put into practice with some form of *procedures and practices* followed repeatedly. However, these are not fully standardised. *Tools & techniques* and *organisational infrastructure* are inadequate in meeting the demands of a structured project management practice. Thus, majority of success depends on some experienced individual managers or external consultants and contractors who have been used.

6.3.10 Programme management (Gap: 3.75)

Findings of the interviews indicate that there is some *understanding* of the management of programmes of projects together with functional activities within the senior management level. Limitations in *tools and techniques* and *infrastructure* for the different project management topics discussed are also reflected here. There are no formal *procedures and practices* to support programme management. Also, the organisation structure does not support a project based setup, compared to the nature of projects and programmes carried out.

Figure 7 shows a representation of how enterprise project and programme management is distributed within FCDA. It interestingly indicates the existence of organisational project management. However, the practice is not fully identified, well supported and will require adequate tools and techniques, and organisational infrastructure changes to make it structured.

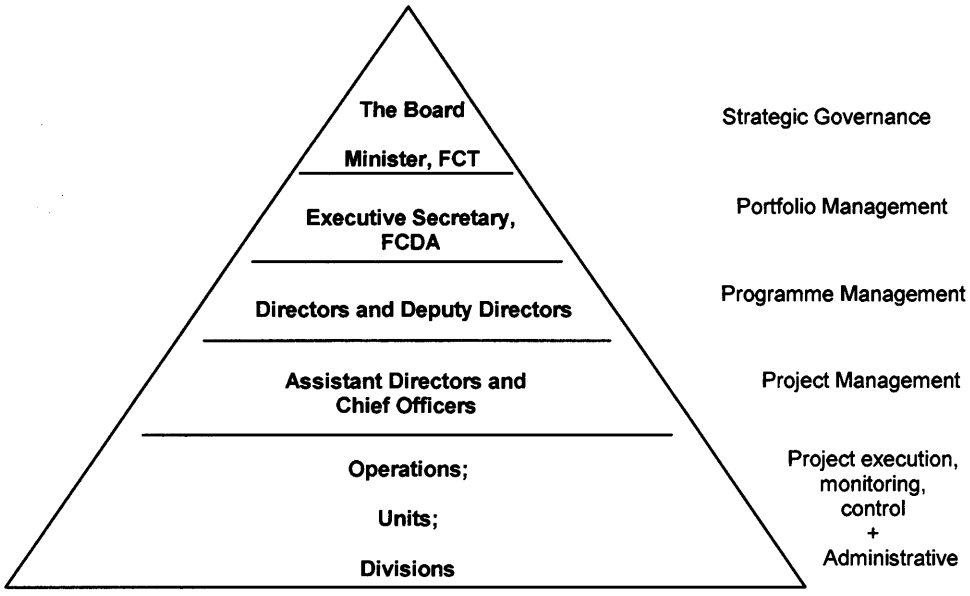

Figure 7: Enterprise portfolio, programme and project management within FCDA

6.4 *Summary: Implications of the results to FCDA*

The findings suggest that FCDA has a good knowledge base in organisational project management. It uses some practices for managing its projects, but they are not well structured and supported. Best practice tools and techniques are only fairly used, which makes the practices basic. Organisational infrastructure does not support that of a well-established project management practice. The implication of this is that FCDA should focus on the aspects that will enable it build the foundation for a structured project and programme management practice. This can be justified because considering FCDA's average maturity level on the border between level 1 and 2, it can use its higher knowledge content to develop its practices, tools and techniques and infrastructure to meet requirements of a more structured practice. Thus, FCDA will have to focus on developing strategies for improving its performance and reprioritising its methodologies.

Concerning changing the way things are done within FCDA, part of the data from the interviews, which have not been presented, indicate that the interviewees agreed that there was room for improvement. They also indicated that a change management process will likely be supported positively within the organisation.

6.5 *Validity of findings*

Only 28 topics in the APM BoK have been considered for the research. This leaves the question of what the actual maturity level would be if all 52 topics were used. Although, including the outstanding 24 topics will significantly influence the results, it may also be argued that all the topics themselves are interrelated and that this research has focused on and used the core topics relevant to FCDA.

Previous research have indicated that majority of organisations are within levels 1 and 2 (Remy, 2997) using the CMM guide. However, it will not be suitable to compare them with the result of 1.92 obtained by FCDA, because methods used have been fairly different.

The gap analysis have been carried out by comparing FCDA's current practice with the highest maturity level of 5, even though they do not necessarily have to be on that high level for all topics as identified in the literature review.

The use of the four discussion themes for analysis of findings may be challenged with the question of why or how valid it is to use them in equal weighs for calculations of average maturity levels.

Business and financial benefits of FCDA adopting a structured approach to project management is not considered. In addition, the extent of success or failure of FCDA's project performance and quality of services has not been used for analysis.

7.0 Conclusion and recommendation

7.1 Conclusion

This research aimed to investigate how public sector organisations in Nigeria apply project management practices at an organisational level to identify strengths, weaknesses and key improvement areas. It was also intended to add to the limited research work in this area and answer the research questions of the extent to which such organisations accord to established project management practices.

Review of literature carried out showed that combining the APM BoK and the fundamental model of the CMM and P3M3 were suitable as a guide for developing the pilot project management maturity model used for assessing organisational project management practices.

Findings of the assessment carried out on FCDA – the case study organisation, shows that it is on level 1.92 out of 5, on the project management maturity spectrum. This indicates a Level 1 (Initial / Adhoc but aware), but much closer to Level 2 (Repeatable / Basic). Breakdown of the four themes used for assessment and discussions show insights that are interesting from the findings. It was established that there is substantial *knowledge* of organisational project management competency within FCDA at level 2.76, which is close to Level 3 (Defined / Established – organisational). *Practices and procedures* used within the organisation were at level 2.05, while *tools and techniques* and the *organisational infrastructure* used to support project management were both inadequate at level 1.43 each.

These findings indicate that FCDA recognises and understands project management and carries it out differently from functional or operational activities. It also shows that their project management practices, procedures and processes are understood and carried out repeatedly, but not fully supported and structured within the organisation. The reason for this trend is perhaps due to a 'knowledge pull', which has influenced FCDA's practices and procedures. This implied that lessons learnt mainly from education and experience of some senior employees (and possibly influence of external consultants and contractors) has been introduced into the practices and procedures of the organisation. However, FCDA is still weak on tools and techniques and its organisational infrastructure have not been able to complement the knowledge capacity.

The gap between the current knowledge base and the practices, tools and techniques indicate that FCDA has the potential to improve and perform better than its current capacity.

These findings answer the research question and show that there is indeed a level of organisational project management practice in the Nigerian public sector, even though on a low level as the case study suggests. The limitations identified for a more structured practice in FCDA appeared in the tools and techniques, which were not used and organisational infrastructure and environment, which were rather inadequate in complementing the knowledge available.

The evidence from this research indicates that the issue should not be arguments on whether or not there are barriers in implementing established project management practices in the Nigerian environment. This is because for example, even in developed countries, such practices have to be modified to suit their particular contexts and environments as have been clearly expressed in the BoKs reviewed. The focus for Nigeria (and indeed developing countries) should then be more on developing strategies to implement and apply such project management practices.

7.2 Recommendation

Developing organisational competencies in individual topics such as risk management, alternative forms of procurement and project finance will enhance FCDA's current operations. However, FCDA should consider improving its organisational project management practice by focusing on a move to a higher maturity level. This is because it already has aspects of the knowledge foundation required to start such improvement initiative. In addition, improvement based on the concepts of project management maturity, benchmarking and gap analysis will allow for a more structured approach to improvement and enable them identify where they are, determine where they want to be and prioritise their efforts iteratively.

The organisational improvement initiative should be based on a strategy for improving its performance and reprioritising its methodologies. The project management maturity assessment in this research provides an indication of FCDA's current practices. The benchmarking and gap analysis carried out provides valuable reference on its strengths, weaknesses and key areas for improvement. FCDA's strengths were in project quality management, procurement, legal awareness, and human resource management. Its

weaknesses were in value management, project risk management, project office and programme management. Key improvement areas included project success & benefit management, project management plan, risk management, project office and overall project and programme management, which should be focused on to build the structured organisational project management practice.

Although there are many approaches available, FCDA has to adopt one of the best practice guidance in organisational project and programme management (such as APM BoK, PMBOK and PRINCE 2) to suit its activities and needs. It should also focus on competency training at all levels of the organisation and the development of purpose made tools and techniques to accompany such training. A system for measuring and monitoring its performances regularly should be developed based on the maturity assessment and gap analysis described above.

The use of a fully functional project office will be valuable to deal with these issues, support project management practice (not just to monitor project performance) and develop FCDA's own project management knowledge base taken from its best practices.

The recommendations presented will require dedicated change management consideration and commitment from the senior management and full support organisation wide. FCDA would also have to determine the extent to which it intends to change its current practices in aspects such as its organisation structure.

The use of a combination of **in – house professional team** and **external consultants/experts** will be effective in developing and monitoring the improvement initiatives.

Although the APM BoK serves as a good guide for organisational project management, with its focus on the management of projects approach, its use as a reference guide to develop a project management maturity model was not found in previous research. The majority of models found have been based on the PMBOK, while the OPM3 and P3M3 provide further best practice guidance. Not withstanding this, the APM should consider developing its own guidance for organisations who want to assess and develop their project management competency and practices based on the APM BoK model.

7.3 Areas for further research

This research focused on just one of many organisations practicing or attempting to practice project management in the Nigerian public sector. FCDA itself has been involved in managing projects for a long time compared to many other organisations. Thus, this research may still be inadequate in representing the whole sample of public sector organisations. More research is required on other government organisations, extending it to the private sector, benchmarking within and across different industries, sectors and other classes of organisations in Nigeria.

Within the broader context, such research will be valuable in complementing practical applications to form the foundation for the development of formal bodies of knowledge and best practices in project management suitable for the Nigerian context and environment. These studies and knowledge guides will be more applicable and authoritative for project management practice in Nigeria.

7.4 Limitations and constraints

7.4.1 Limitations

Qualitative researches such as that used for this study have their limitations mainly from uncertainty in the quality and accuracy of information obtained.

A widespread survey and assessment involving middle and lower level employees has not been used in assessing FCDA. This can be a limitation because it will also be important to know if project management is understood across the organisation, not just at the top management. This limitation may not affect the results and findings since focus of the research is on organisational project management and the methodology used focused on the appropriate people who have responsibility in those areas.

A lot of information has been obtained for the research. However, due to space limitations, substantial amounts have been sieved, while the general scale of the research has also been reduced. For example, only 28 topics in the APM BoK have been considered. FCDA may have to consider a wider range of topics for further implementation of recommendations.

7.4.2 Constraints

When measuring maturity levels, the 'people' issues appeared difficult to assess and map into maturity levels. Some of the information from interviews was taken more subjectively i.e.

based on the perception of what the researcher/interviewer felt and the body language of interviewees.

A constraint is also observed in level of experience of the researcher, considering the suggestion that project management maturity assessment should best be carried out by experts in the field (Crawford, J, 2006).

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APPENDIX

DESCRIPTIVE SUMMARY OF THE SECTIONS AND TOPICS OF THE APM BODY OF KNOWLEDGE (2006), 5TH EDITION

Section one introduces, defines and sets the context for projects and project management as a profession different from general or operational management in an organisation. It describes how individuals and organisations can manage projects, programmes and even operational activities as a portfolio and the need to consider the varying context and environment within which projects operate. It also explains and emphasises the need for dedicated senior management and organisational support for project management services within an organisation.

The second section provides and explains management approaches for planning and developing strategic framework required for managing projects. It emphasises that consideration should be given to managing stakeholders, proactive management of risks as opportunities or threats, how the project will deliver value, managing quality in projects. Others aspects include health, safety and environmental issues and how the success criteria and benefits of projects should be determined, measured and managed. One important aspect is the development of a management plan to 'document the outcomes of the project planning process and provide a reference document for managing all aspects of a project' (APM, 2006).

The third section on project execution deals with issues relating to implementing the project management plan and monitoring and controlling projects within the project context. The APM BoK emphasises the need for definition of project scope, determination of project schedule, establishment of resource requirements and budgeting and costing to meet the requirement of the project management plan. Also emphasised are the need for proactive management of information and project issues and the continuous measurement and management of project performance and changes to agreed project plans.

Section four is dedicated to aspects thought to be important for technical effectiveness in the management of projects. Emphasis is given to the management of stakeholder and end user requirements, methods for estimating cost and time objectives (including work breakdown structure) and technological aspects required for managing and delivering a project. Other aspects include modelling and testing, managing project deliverables throughout a project's life cycle and value engineering.

Association for Project Management Body of Knowledge (5th edition) – SECTIONS AND TOPICS	
Section 1: Project management in context	**Section 5: Business and commercial**
1.1 Project management	5.1 Business case
1.2 Programme management	5.2 Marketing and sales
1.3 Portfolio management	5.3 Project financing and funding
1.4 Project context	5.4 Procurement
1.5 Project sponsorship	5.5 Legal awareness
1.6 Project office	
	Section 6: Organisation and governance
Section 2: Planning the strategy	6.1 Project life cycles
2.1 Project success and benefits management	6.2 Concept
2.2 Stakeholder management	6.3 Definition
2.3 Value management	6.4 Implementation
2.4 Project management plan	6.5 Handover and closeout
2.5 Project risk management	6.6 Project reviews
2.6 Project quality management	6.7 Organisation structure
2.7 Health, safety and environmental management	6.8 Organisational roles
	6.9 Methods and procedures
Section 3: Executing the strategy	6.10 Governance of project management
3.1 Scope management	
3.2 Scheduling	**Section 7: People and the profession**
3.3 Resource management	7.1 Communication
3.4 Budgeting and cost management	7.2 Teamwork
3.5 Change control	7.3 Leadership
3.6 Earned value management	7.4 Conflict management
3.7 Information management and reporting	7.5 Negotiation
3.8 Issue management	7.6 Human resource management
	7.7 Behavioural characteristics
Section 4: Techniques	7.8 Learning and development
4.1 Requirements management	7.9 Professionalism and ethics
4.2 Development	
4.3 Estimating	
4.4 Technology management	
4.5 Value engineering	
4.6 Modelling and testing	
4.7 Configuration management	
Source: APM BoK 5th edition (APM, 2006)	

The fifth section deals with the business and commercial issues. It emphasises the need to ensure the linking of project benefits, costs and risks with the wider business or organisational objectives. Other aspects include the need for competency in marketing and selling of project outputs (to gain buy-in), legal awareness, sourcing and managing finances and all aspects of procurement management.

Section six deals with the form of organisation and governance that will be used to manage the project. It describes the generic project life cycle that every project follows. The phases include concept, definition, implementation, and handover and closeout. Another important concept included is the project review that should be done throughout the project life cycle to monitor achievability of project objectives. Other aspects emphasised are the need for understanding the project organisation environment, providing appropriate organisation structure for managing projects, defining roles and responsibilities of project teams, developing structured methods and procedures and adequately linking corporate governance of the organisation with its project activities.

The seventh section deals with people related issues. It emphasises that the success or failure of projects depend on people and the nature of their involvement. It explains the need for effective communication, teamwork, leadership, conflict resolution, negotiation, human resource management and professionalism and ethics of project personnel. It describes the important behavioural characteristics required for project management and the need for continuous development of competences in an organisation.

DESCRIPTIVE ANALYSIS AND LESSONS LEARNT FROM SELECTED PROJECT MANAGEMENT MATURITY MODELS AND ASSESSMENT METHODS

Crawford, J. (2006) mainly serves as a guide for organisations who intend to carry out organisational project management maturity assessments as part of their organisational improvement process. **Grant and Pennypacker (2006)** and **Pennypacker and Grant (2003)** had different purposes including comparison of project management practices across and within selected industries. They concluded that majority of organisations assessed were between levels 1 and 2 within the maturity spectrum and would need to develop 'formal, documented standards across their companies' to move to higher maturity levels. These three literatures used the PM Solutions Project Management Maturity Model illustrated below.

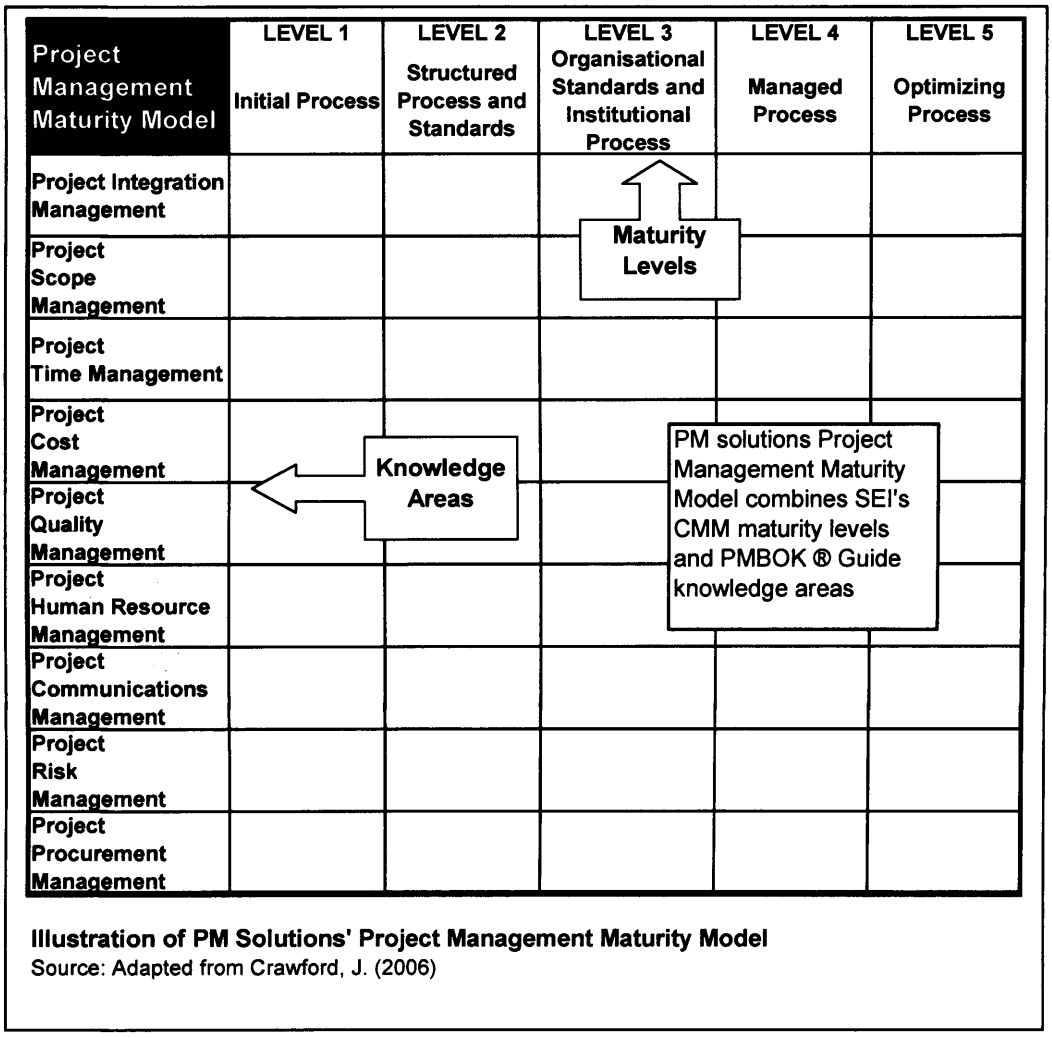

Illustration of PM Solutions' Project Management Maturity Model
Source: Adapted from Crawford, J. (2006)

The research by **Remy (1997)** indicates that maturity models provide a way of assessing project management operations, identifying gaps, establishing priorities and determining where an organisation lies in its improvement process. The research found that majority of organisations appear to be on level 1 or 2 and still achieve reasonable level of success, not because there is a project management process, but because of the efforts of exceptional individuals (project managers) who are able to work (and manage) with the poor processes in the organisation. One important finding is the emphasis of not pushing an organisation to attain level 5 in all project management categories, but to find the best combination of maturity levels in the various categories that will be most cost effective to the organisation and at the same time produce 'excellent project performance'.

This position is also taken by Crawford, J (2006), suggesting that not all organisations need to be in level 5, and that they need to check if their current level gives them their desired value and then compare their return on investment (in terms of money or customer satisfaction) for moving to the next level.

PROJECT FRAMEWORK – A project management maturity model **(Levin et al, 1999)**, follows a similar format to Crawford, J. (2006) and Grant and Pennypacker (2006). Developed by ESI International (project management practitioners), the model mainly serves as a guide and appears to provide a means for narrowing the scope of the improvement activities required by targeting only those processes and components of project management to enable a firm move to the next maturity model.

Ibbs and Kwak have also used the 2-dimension model of combining PMBOK knowledge areas and the CMM. Based on the assessment of companies within and across four major industries, **Ibbs and Kwak (2000)** concluded that organisations with high project management maturity usually have better project performance. Notable findings in **Ibbs et al (2004)** is the conclusion that improvement in project management maturity would lead to improvement in cost and schedule performance, improvement in cost and schedule reliability and lower overall project management cost in delivering projects, thereby supporting the notion of benefits in project management.

Some maturity models have been developed using different concepts. Hillson (2001) developed a Project Management Maturity Model (ProMMM) based on lessons from SEI's CMM, the EFQM Excellence Model from the European Foundation for Quality Management and practice experience within the author's professional consultancy. The maturity model has four unique levels of increasing project management capability as follows: *Naive*, *Novice*, *Normalised* and *Natural*. These were mapped against four attributes to represent the aspects that organisation require for effective project management. The four attributes were *Culture*, *Process*, *Experience* and *Application*. The model does not appear to be based on any major theoretical research. However, Hillson argued that the model itself is practical and based on experience of leading consultants in the project management field.

Gareis (2001) and **Gareis and Huemann (2000)** notably suggests the approach of using a spider web in assessing capability of organisations rather than using maturity levels, because the latter appears to be rigid, while the former allows for more differentiation in describing the competencies needed by organisations.

Lubianiker (2000) argued that the model used by the CMM appear to be 'closed' and do not allow flexibility because organizations differ and as such their definition of project management. He presented the 'Project Management Assessment 2000' which he described as an 'open maturity model' that will allow organisations to incorporate general project management knowledge, tools, procedures and standards and then define those specific aspects suited to the organisation's needs. The model illustrated below was designed by breaking down project management into 37 processes (and 9 knowledge areas) based on the 1996 edition of PMBOK ® Guide. Four 'enablers' were designed to indicate the aspects in the 37 processes that should be assessed and improved in organisations, thereby having 148 enablers. The enablers are Knowledge, Tools and Techniques, Practices, and Infrastructure. The model is presented in the figure below.

Lubianiker placed emphasis on a 10–step process for implementation the project management survey – assessment – improvement – reassessment approach. One key lesson from this model is the argument that implementing organisational project management through assessment and improvement plans is much more than using maturity models.

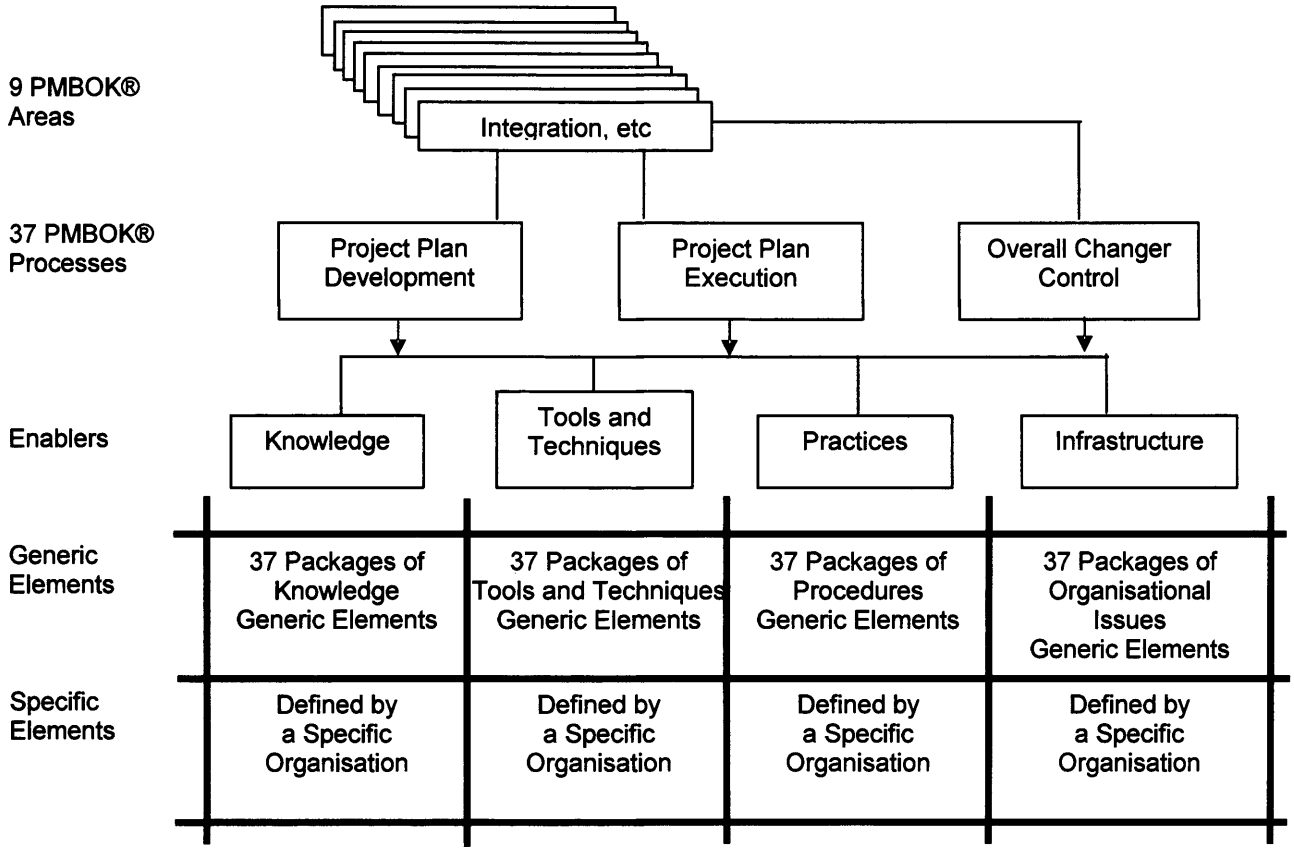

Figure: Hierarchy description of Project Management Assessment 2000 model

Source: Lubianiker (2000) (Copyright: Leshem-Nituv Engineers)

CRITERIA FOR SELECTION OF PROJECT MANAGEMENT KNOWLEDGE TOPICS

The selection of the topics is based on those that project and programme management professionals 'strongly agree' are required for successful project and programme management. This list is taken from a modified crude analysis presented in the study by Morris et al (2006) during the research on the updating of the APM BoK 4th edition (2000) to produce the APM BoK 5th edition (2006). They figures have been modified to suit this research as follows.

1. Pages C/2 and C/5 are tables extracted from Morris et al (2006) which indicate the responses of experts on their perspectives on the relevance of the project management and programme management topics respectively.

2. The figures for responses to 'construction (building)' sector and 'government' sector were taken out to arrive at a new weighted average for both for both project management and programme management topics – Pages C/3 and C/6.

   This is in consideration that the model is for FCDA - a government organisation mainly operating in the construction sector.

3. The results were then rearranged in descending order of relevance while also combining tables for both existing topics and new topics – Pages C/4 and C/7.

4. The average of the results for both project management and programme management were then combined to give a 'SUMMARY' figure - Page 8.

5. The results were again rearranged in descending order (Page 9).

6. The details of the topics finally selected with brief comments on them are provided on pages 10 and 11.

   Only the top ranking topics scoring 90% have been selected due to limitations in size of the proposed research. Some topics appear combined because of their similarities and overlapping content. The researcher also selected some topics subjectively, e.g. project office, because of their perceived importance to project management in the Nigerian environment.

7. The list as extracted from page 11 is then presented in page 12.

8. The final list is presented in page 13.

Project management perspective on topics' relevance

	BoK Topic	Business sector											
		Rating sample tool	Total Weighted average	Aerospace & defence, %/sample	Construction (building), %/sample	Process engineering – oil & gas, %/sample	Process engineering – utilities, %/sample	Transport – rail, %/sample	Drug development, %/sample	Manufacturing, %/sample	ICT (software), %/sample	Financial services (banks), %/sample	Government, %/sample
1	Project Management	218	100	100–0/45	100–0/56	100–0/24	100–0/26	100–0/36	100–0/23	97–3/37	100–0/80	100–0/49	100–0/86
2	Program Management	195	92	95–5/42	96–4/47	83–17/24	87–13/23	93–7/28	90–10/21	88–12/34	93–7/70	93–7/43	90–10/74
3	Project Context	185	91	93–7/42	89–11/45	86–14/21	91–9/23	90–10/29	89–11/19	91–9/33	96–4/69	90–10/42	90–10/69
4	Project Success Criteria	155	100	100–0/49	97–3/37	100–0/20	100–0/21	100–0/25	100–0/19	100–0/29	100–0/63	100–0/39	100–0/62
5	Strategy/PMP	155	99	100–0/36	100–0/36	100–0/20	100–0/21	100–0/23	100–0/19	96–4/26	98–2/61	97–3/36	98–2/55
6	Value Management	147	88	87–13/38	94–6/36	90–10/20	89–11/19	95–5/22	84–16/19	81–19/26	89–11/55	85–15/34	89–11/55
7	Risk Management	146	100	100–0/39	100–0/38	100–0/20	100–0/20	100–0/23	100–0/18	100–0/26	100–0/58	100–0/34	100–0/57
8	Quality Management	141	93	94–6/35	94–6/36	95–5/20	90–10/20	95–5/22	89–11/18	92–8/24	93–7/55	88–12/33	96–4/51
9	HSE	140	83	78–22/36	97–3/34	78–22/18	79–21/19	90–10/21	63–37/19	82–18/22	83–17/53	77–23/31	92–8/50
10	Work Content & Scope Management	128	98	100–0/35	100–0/42	94–6/18	95–5/19	100–0/21	94–6/16	100–0/22	98–2/51	100–0/30	98–2/48
11	Time phasing/Scheduling	130	96	97–3/35	97–3/34	94–6/18	95–5/19	95–5/20	88–12/17	96–4/23	98–2/52	97–3/30	98–2/50
12	Resource Management	128	96	100–0/33	97–3/33	89–11/18	89–11/19	95–5/20	88–12/17	100–0/23	98–2/50	97–3/29	94–6/49
13	Budgeting & Cost Management	126	96	97–3/36	97–3/35	94–6/18	95–5/19	95–5/20	88–12/17	96–4/23	98–2/49	96–4/28	98–2/48
14	Change Control	126	100	100–0/35	100–0/34	100–0/18	100–0/19	100–0/20	100–0/17	100–0/23	100–0/49	100–0/29	100–0/48
15	Earned Value Management	126	90	94–6/35	82–18/34	89–11/18	95–5/19	85–15/20	88–12/17	96–4/23	92–8/49	86–14/28	89–11/47
16	Information Management	125	94	91–9/22	97–3/32	89–11/18	89–11/19	95–5/19	88–12/17	100–0/18	95–5/57	93–7/28	98–2/48
17	Design, Impl'tation & Handover	121	99	100–0/30	100–0/42	100–0/17	100–0/18	100–0/19	100–0/16	100–0/21	96–4/47	96–4/27	98–2/49
18	Requirements Management	118	98	100–0/33	94–6/32	100–0/16	100–0/18	94–6/18	100–0/14	100–0/20	100–0/46	92–8/26	100–0/44
19	Estimating	118	97	100–0/29	94–6/32	88–12/17	94–6/18	100–0/18	94–6/16	100–0/20	98–2/46	96–4/26	98–2/44
20	Technology Management	116	82	87–13/31	84–16/32	87–13/16	94–6/18	83–17/18	86–14/14	63–37/19	82–18/45	81–19/26	79–21/43
21	Value Engineering	117	79	77–23/30	84–16/31	75–25/16	83–17/18	83–17/18	75–25/16	80–20/20	85–15/46	69–31/26	74–26/43
22	Modelling & Testing	116	91	89–11/28	87–13/30	100–0/15	94–6/17	89–11/18	87–13/15	90–10/20	93–7/46	96–4/25	88–12/41
23	Configuration Management	115	92	96–4/27	87–13/30	93–7/15	88–12/17	88–12/17	86–14/14	95–5/19	98–2/45	88–12/25	95–5/42
24	Business Case	114	99	96–4/28	100–0/39	100–0/14	100–0/16	100–0/16	100–0/14	95–5/19	100–0/45	100–0/24	100–0/40
25	Marketing & Sales	114	73	82–18/28	74–26/31	79–21/14	81–19/16	69–31/16	64–36/14	84–16/19	71–29/45	56–44/24	72–28/39
26	Financial Management	113	96	100–0/28	93–7/29	92–8/13	94–6/16	94–6/16	86–14/14	100–0/19	100–0/45	88–12/24	98–2/40
27	Procurement	111	99	100–0/24	100–0/30	100–0/13	100–0/16	100–0/16	100–0/14	100–0/19	100–0/35	92–8/24	100–0/41
28	Legal Awareness	111	91	93–7/29	97–3/31	92–8/13	100–0/18	81–19/16	86–14/14	95–5/19	91–9/45	83–17/24	90–10/39
29	Life Cycle Design Mgt	109	94	93–7/28	90–10/29	92–8/13	88–12/17	94–6/16	93–7/14	96–4/23	96–4/45	96–4/24	95–5/38
30	Opportunity	111	79	89–11/28	72–28/29	77–23/13	81–19/16	69–31/16	71–29/14	84–16/19	86–14/43	77–23/22	77–23/40
31	Design and development	109	96	100–0/28	93–7/28	92–8/12	100–0/15	93–7/15	92–8/13	96–4/18	98–2/43	96–4/23	95–5/39
32	Implementation	110	93	93–7/28	90–10/29	85–15/13	100–0/16	88–12/17	86–14/14	89–11/19	95–5/44	92–8/24	98–2/40
33	Handover	109	94	96–4/26	96–4/28	92–8/12	100–0/15	93–7/15	85–15/13	94–6/18	95–5/43	96–4/23	92–8/39
34	Project Evaluation Review	110	92	93–7/28	93–7/29	92–8/13	94–6/16	88–12/16	86–14/14	89–11/19	92–8/44	92–8/24	92–8/40
35	Organization Structure	109	98	100–0/27	97–3/29	100–0/12	100–0/15	100–0/15	100–0/13	100–0/18	98–2/43	96–4/23	97–3/39
36	Organizational Roles	108	98	100–0/27	96–4/28	100–0/12	100–0/15	100–0/15	92–8/12	100–0/17	98–2/43	100–0/23	97–3/38
37	Communication	108	96	96–4/27	96–4/28	92–8/13	93–7/15	94–6/16	92–8/13	94–6/18	98–2/44	96–4/24	98–2/41
38	Teamwork	108	92	93–7/27	89–11/28	85–15/13	93–7/15	82–18/17	85–15/13	94–6/18	98–2/42	92–8/24	93–7/40
39	Leadership	108	96	96–4/27	96–4/28	92–8/13	93–7/15	94–6/16	100–0/13	94–6/18	98–2/44	96–4/24	98–2/41
40	Conflict Management	108	98	96–4/26	100–0/28	100–0/13	100–0/15	100–0/16	100–0/13	94–6/18	100–0/42	100–0/25	95–5/40
41	Negotiation	108	97	96–4/27	96–4/28	92–8/13	100–0/15	94–6/16	92–8/13	100–0/18	100–0/42	92–8/24	98–2/40
42	Personnel Management	109	87	84–16/25	93–7/28	92–8/13	93–7/15	81–19/16	85–15/13	83–17/18	83–17/42	87–13/24	87–13/39
	Project management perspective on new topics												
1	Portfolio Management	108	82	81–19/27	71–29/28	85–15/13	80–20/15	88–12/16	92–8/12	83–17/18	88–12/41	87–13/23	74–26/39
2	Ethics	108	84	81–19/27	93–7/29	100–0/13	87–13/15	87–13/15	100–0/12	88–12/16	80–20/40	78–22/23	74–26/39
3	Benefits Management	108	87	69–31/26	81–19/26	92–8/12	100–0/11	87–13/15	100–0/11	88–12/16	95–5/40	91–9/23	84–16/38
4	Critical Chain	107	68	81–19/27	70–30/27	58–42/12	50–50/14	67–33/15	56–44/9	88–12/16	70–30/40	57–43/23	68–32/38
5	Supply Chain Management	108	77	88–12/28	81–19/27	83–17/12	86–14/14	67–33/15	82–18/11	75–25/16	73–27/40	65–35/23	76–24/38
6	Stakeholder Management	108	99	100–0/26	93–7/27	100–0/12	100–0/14	93–7/15	100–0/11	100–0/16	100–0/40	100–0/21	100–0/37
7	Knowledge Management	108	86	78–22/23	89–11/27	92–8/12	86–14/14	87–13/15	100–0/11	88–12/16	83–1 7/40	87–13/23	82–18/38
8	Organizational Learning	108	80	73–27/26	81–19/26	92–8/12	71–29/14	87–13/15	91–9/11	88–12/16	74–26/39	82–18/22	81–19/37
9	Concurrent Engineering	109	63	73–27/22	67–33/27	58–42/12	50–50/14	60–40/15	72–28/11	69–31/16	55–45/40	50–50/22	74–26/38
10	Tender & Contract Management	108	97	96–4/26	100–0/27	92–8/12	100–0/14	100–0/14	92–8/12	100–0/16	100–0/41	91 –9/23	95–5/38
11	Project Performance Management	108	89	92–8/26	93–7/27	83–17/12	93–7/14	87–13/15	82–18/11	88–12/16	93–7/40	87–13/23	87–13/38
12	PMSO	108	80	81–19/27	74–26/27	75–25/12	57–43/14	62–38/13	82–18/11	82–18/17	85–15/40	83–17/24	89–11/38
13	PM Competencies & Capabilities	107	78	65–35/23	84–16/25	83–17/12	71–29/14	80–20/15	73–27/11	77–23/13	83–17/36	73–27/22	80–20/35
14	PM_3	107	76	74–26/27	74–26/27	83–17/12	57–43/14	73–27/15	82–18/11	67–33/15	82–18/39	74–26/23	82–18/38
15	Uncertainty	107	82	85–15/26	82–18/28	92–8/12	64–36/14	73–27/15	91–9/11	87–13/15	85–15/39	83–17/23	81–19/37
16	Governance	107	86	82–18/22	81–19/27	92–8/12	64–36/14	87–13/15	91–9/11	73–27/15	90–10/39	96–4/23	89–11/38

Project management perspective on topics' relevance

	BoK Topic	Business sector					Weigted average for Constn & Govt %/sample
		Rating sample tool	Total Weighted average	Construction (building), %/sample	Government, %/sample		
1	Project Management	218	100	100–0/56	100–0/86		100.00
7	Risk Management	146	100	100–0/38	100–0/57		100.00
14	Change Control	126	100	100–0/34	100–0/48		100.00
24	Business Case	114	99	100–0/39	100–0/40		100.00
27	Procurement	111	99	100–0/30	100–0/41		100.00
10	Work Content & Scope Management	128	98	100–0/42	98–2/48		98.93
17	Design, Impl'tation & Handover	121	99	100–0/42	98–2/49		98.92
4	Project Success Criteria	155	100	97–3/37	100–0/62		98.88
5	Strategy/PMP	155	99	100–0/36	98–2/55		98.79
11	Time phasing/Scheduling	130	96	97–3/34	98–2/50		97.60
16	Information Management	125	94	97–3/32	98–2/48		97.60
13	Budgeting & Cost Management	126	96	97–3/35	98–2/48		97.58
18	Requirements Management	118	98	94–6/32	100–0/44		97.47
37	Communication	108	96	96–4/28	98–2/41		97.19
39	Leadership	108	96	96–4/28	98–2/41		97.19
41	Negotiation	108	97	96–4/28	98–2/40		97.18
40	Conflict Management	108	98	100–0/28	95–5/40		97.06
35	Organization Structure	109	98	97–3/29	97–3/39		97.00
36	Organizational Roles	108	98	96–4/28	97–3/38		96.58
19	Estimating	118	97	94–6/32	98–2/44		96.32
26	Financial Management	113	96	93–7/29	98–2/40		95.90
12	Resource Management	128	96	97–3/33	94–6/49		95.21
8	Quality Management	141	93	94–6/36	96–4/51		95.17
32	Implementation	110	93	90–10/29	98–2/40		94.64
31	Design and development	109	96	93–7/28	95–5/39		94.16
9	HSE	140	83	97–3/34	92–8/50		94.02
33	Handover	109	94	96–4/28	92–8/39		93.67
28	Legal Awareness	111	91	97–3/31	90–10/39		93.10
29	Life Cycle Design Mgt	109	94	90–10/29	95–5/38		92.84
34	Project Evaluation Review	110	92	93–7/29	92–8/40		92.42
2	Program Management	195	92	96–4/47	90–10/74		92.33
23	Configuration Management	115	92	87–13/30	95–5/42		91.67
38	Teamwork	108	92	89–11/28	93–7/40		91.35
6	Value Management	147	88	94–6/36	89–11/55		90.98
3	Project Context	185	91	89–11/45	90–10/69		89.61
42	Personnel Management	109	87	93–7/28	87–13/39		89.51
22	Modelling & Testing	116	91	87–13/30	88–12/41		87.58
15	Earned Value Management	126	90	82–18/34	89–11/47		86.06
30	Opportunity	111	79	72–28/29	77–23/40		82.03
20	Technology Management	116	82	84–16/32	79–21/43		81.13
21	Value Engineering	117	79	84–16/31	74–26/43		78.19
25	Marketing & Sales	114	73	74–26/31	72–28/39		72.89
	Project management perspective on new topics						
10	Tender & Contract Management	108	97	100–0/27	95–5/38		97.08
6	Stakeholder Management	108	99	93–7/27	100–0/37		97.05
11	Project Performance Management	108	89	93–7/27	87–13/38		89.49
16	Governance	107	86	81–19/27	89–11/38		85.68
7	Knowledge Management	108	86	89–11/27	82–18/38		84.91
3	Benefits Management	108	87	81–19/26	84–16/38		82.78
12	PMSO	108	80	74–26/27	89–11/38		82.77
2	Ethics	108	84	93–7/29	74–26/39		82.10
13	PM Competencies & Capabilities	107	78	84–16/25	80–20/35		81.67
15	Uncertainty	107	82	82–18/28	81–19/37		81.43
8	Organizational Learning	108	80	81–19/26	81–19/37		81.00
14	PM_3	107	76	74–26/27	82–18/38		78.68
5	Supply Chain Management	108	77	81–19/27	76–24/38		78.08
1	Portfolio Management	108	82	71–29/28	74–26/39		74.98
9	Concurrent Engineering	109	63	67–33/27	74–26/38		71.09
4	Critical Chain	107	68	70–30/27	68–32/38		68.83

Project management perspective on topics' relevance

	BoK Topic	Business sector					
		Rating sample tool	Total Weighted average	Construction (building), %/sample	Government, %/sample		Weigted average for Constn & Govt %/sample
1	Project Management	218	100	100–0/56	100–0/86		100.00
7	Risk Management	146	100	100–0/38	100–0/57		100.00
14	Change Control	126	100	100–0/34	100–0/48		100.00
24	Business Case	114	99	100–0/39	100–0/40		100.00
27	Procurement	111	99	100–0/30	100–0/41		100.00
10	Work Content & Scope Management	128	98	100–0/42	98–2/48		98.93
17	Design, Impl'tation & Handover	121	99	100–0/42	98–2/49		98.92
4	Project Success Criteria	155	100	97–3/37	100–0/62		98.88
5	Strategy/PMP	155	99	100–0/36	98–2/55		98.79
11	Time phasing/Scheduling	130	96	97–3/34	98–2/50		97.60
16	Information Management	125	94	97–3/32	98–2/48		97.60
13	Budgeting & Cost Management	126	96	97–3/35	98–2/48		97.58
18	Requirements Management	118	98	94–6/32	100–0/44		97.47
37	Communication	108	96	96–4/28	98–2/41		97.19
39	Leadership	108	96	96–4/28	98–2/41		97.19
41	Negotiation	108	97	96–4/28	98–2/40		97.18
10	Tender & Contract Management	108	97	100–0/27	95–5/38		97.08
40	Conflict Management	108	98	100–0/28	95–5/40		97.06
6	Stakeholder Management	108	99	93–7/27	100–0/37		97.05
35	Organization Structure	109	98	97–3/29	97–3/39		97.00
36	Organizational Roles	108	98	96–4/28	97–3/38		96.58
19	Estimating	118	97	94–6/32	98–2/44		96.32
26	Financial Management	113	96	93–7/29	98–2/40		95.90
12	Resource Management	128	96	97–3/33	94–6/49		95.21
8	Quality Management	141	93	94–6/36	96–4/51		95.17
32	Implementation	110	93	90–10/29	98–2/40		94.64
31	Design and development	109	96	93–7/28	95–5/39		94.16
9	HSE	140	83	97–3/34	92–8/50		94.02
33	Handover	109	94	96–4/28	92–8/39		93.67
28	Legal Awareness	111	91	97–3/31	90–10/39		93.10
29	Life Cycle Design Mgt	109	94	90–10/29	95–5/38		92.84
34	Project Evaluation Review	110	92	93–7/29	92–8/40		92.42
2	Program Management	195	92	96–4/47	90–10/74		92.33
23	Configuration Management	115	92	87–13/30	95–5/42		91.67
38	Teamwork	108	92	89–11/28	93–7/40		91.35
6	Value Management	147	88	94–6/36	89–11/55		90.98
3	Project Context	185	91	89–11/45	90–10/69		89.61
42	Personnel Management	109	87	93–7/28	87–13/39		89.51
11	Project Performance Management	108	89	93–7/27	87–13/38		89.49
22	Modelling & Testing	116	91	87–13/30	88–12/41		87.58
15	Earned Value Management	126	90	82–18/34	89–11/47		86.06
16	Governance	107	86	81–19/27	89–11/38		85.68
7	Knowledge Management	108	86	89–11/27	82–18/38		84.91
3	Benefits Management	108	87	81–19/26	84–16/38		82.78
12	PMSO	108	80	74–26/27	89–11/38		82.77
2	Ethics	108	84	93–7/29	74–26/39		82.10
30	Opportunity	111	79	72–28/29	77–23/40		82.03
13	PM Competencies & Capabilities	107	78	84–16/25	80–20/35		81.67
15	Uncertainty	107	82	82–18/28	81–19/37		81.43
20	Technology Management	116	82	84–16/32	79–21/43		81.13
8	Organizational Learning	108	80	81–19/26	81–19/37		81.00
14	PM_3	107	76	74–26/27	82–18/38		78.68
21	Value Engineering	117	79	84–16/31	74–26/43		78.19
5	Supply Chain Management	108	77	81–19/27	76–24/38		78.08
1	Portfolio Management	108	82	71–29/28	74–26/39		74.98
25	Marketing & Sales	114	73	74–26/31	72–28/39		72.89
9	Concurrent Engineering	109	63	67–33/27	74–26/38		71.09
4	Critical Chain	107	68	70–30/27	68–32/38		68.83

Programme management perspective on topics' relevance

	BoK Topic	Business sector											
		Rating sample tool	Total Weighted average	Aerospace & defence, %/sample	Construction (building), %/sample	Process engineering – oil & gas, %/sample	Process engineering – utilities, %/sample	Transport – rail, %/sample	Drug development, %/sample	Manufacturing, %/sample	ICT (software), %/sample	Financial services (banks), %/sample	Government, %/sample
1	Project Management	218	100	100–0/21	100–0/32	100–0/10	100–0/14	100–0/18	100–0/11	94–6/17	100–0/42	100–0/24	100–0/41
2	Program Management	195	90	86–14/22	100–0/28	90–10/10	91–9/11	87–13/15	86–14/7	73–27/15	91–9/35	90–10/21	91–9/35
3	Project Context	185	92	100–0/21	81–19/27	100–0/8	100–0/10	93–7/15	100–0/5	93–7/15	88–12/33	95–5/20	90–10/31
4	Project Success Criteria	155	99	100–0/18	96–4/24	100–0/8	100–0/10	100–0/12	100–0/5	100–0/13	100–0/31	100–0/19	100–0/27
5	Strategy/PMP	155	99	100–0/17	100–0/24	100–0/8	100–0/10	100–0/11	100–0/5	100–0/11	97–3/29	100–0/18	100–0/26
6	Value Management	147	81	65–35/17	88–12/24	75–25/8	70–30/10	91–9/11	60–40/5	73–27/11	81–19/27	83–17/18	93–7/27
7	Risk Management	146	96	94–6/6	100–0/23	100–0/8	90–10/10	100–0/11	83–17/6	91–9/11	96–4/28	94–6/18	96–4/26
8	Quality Management	141	85	82–18/17	87–13/24	75–25/8	90–10/10	90–10/10	60–40/5	78–22/9	84–16/25	89–11/18	92–8/25
9	HSE	140	80	76–24/17	96–4/25	75–25/8	70–30/10	80–20/10	60–40/5	80–20/10	70–30/23	67–33/18	92–8/25
10	Work Content & Scope Management	128	93	88–12/17	100–0/13	100–0/8	80–20/10	100–0/9	100–0/5	90–10/10	91–9/23	88–12/17	96–4/25
11	Time phasing/Scheduling	130	89	88–12/17	95–5/22	88–12/8	80–20/10	89–11/9	80–20/5	80–20/10	91–9/23	88–12/17	92–8/25
12	Resource Management	128	92	100–0/16	95–5/22	100–0/8	80–20/10	100–0/9	100–0/5	90–10/10	87–13/23	87–13/16	88–12/25
13	Budgeting & Cost Management	126	89	87–13/15	95–5/22	87–13/8	80–20/10	89–11/9	80–20/5	80–20/10	91–9/22	87–13/16	92–8/25
14	Change Control	126	100	100–0/16	100–0/22	100–0/8	100–0/10	100–0/9	100–0/5	100–0/10	100–0/25	100–0/16	100–0/25
15	Earned Value Management	126	81	88–12/16	73–27/22	88–12/8	80–20/10	89–11/9	80–20/5	80–20/10	86–14/22	69–31/16	85–15/26
16	Information Management	125	95	93–7/16	95–5/22	100–0/8	90–10/10	100–0/9	100–0/5	100–0/10	93–7/14	87–13/6	96–4/24
17	Design, Impl'tation & Handover	121	99	100–0/15	100–0/14	100–0/8	100–0/10	100–0/9	100–0/5	100–0/10	95–5/22	100–0/16	100–0/24
18	Requirements Management	118	93	93–7/15	95–5/21	100–0/7	90–10/10	100–0/9	71–29/5	90–10/10	95–5/22	87–13/15	96–4/23
19	Estimating	118	90	87–13/15	90–10/21	86–14/7	80–20/10	100–0/9	100–0/5	90–10/10	91–9/22	80–20/15	96–4/23
20	Technology Management	116	86	77–23/13	86–14/21	86–14/7	100–0/9	89–11/9	100–0/4	88–12/8	85–15/20	93–7/14	78–22/23
21	Value Engineering	117	77	67–33/15	76–24/21	57–43/7	80–20/10	78–22/9	60–40/5	70–30/10	82–18/22	80–20/15	87–13/23
22	Modelling & Testing	116	91	93–7/15	85–15/20	100–0/7	100–0/10	89–11/9	100–0/5	100–0/10	90–10/21	93–7/15	83–17/23
23	Configuration Management	115	85	87–13/15	85–15/20	88–14/7	80–20/10	89–11/9	75–25/4	78–22/9	90–10/20	80–20/15	86–14/22
24	Business Case	114	98	93–7/15	100–0/11	100–0/6	100–0/9	87–13/8	100–0/5	100–0/10	100–0/20	100–0/14	100–0/20
25	Marketing & Sales	114	74	73–27/15	65–35/20	83–17/6	78–22/9	75–25/8	80–20/5	80–20/10	75–25/20	73–27/11	71–29/21
26	Financial Management	113	92	93–7/15	95–5/19	100–0/5	89–11/9	88–12/8	100–0/5	90–10/10	95–5/20	86–14/14	90–10/20
27	Procurement	111	94	93–7/15	100–0/19	100–0/5	89–11/9	100–0/8	100–0/5	90–10/10	95–5/20	86–14/14	95–5/20
28	Legal Awareness	111	86	87–13/15	100–0/17	100–0/5	89–11/9	100–0/8	80–20/5	70–30/10	85–15/20	80–20/15	81–19/21
29	Life Cycle Design Mgt	109	89	87–13/15	84–16/19	80–20/5	87–13/8	87–13/8	80–20/5	90–10/10	95–5/19	93–7/14	95–5/21
30	Opportunity	111	72	73–27/15	68–32/19	60–40/5	78–22/9	63–37/8	80–20/5	80–20/10	85–15/20	57–43/14	70/30–20
31	Design and development	109	89	100–0/14	89–11/18	75–25/4	100–0/8	100–0/7	100–0/4	100–0/9	100–0/19	92–8/13	95–5/19
32	Implementation	110	88	87–13/15	89–11/19	80–20/5	89–11/9	100–0/8	100–0/5	80–20/10	90–10/20	86–14/14	85–15/20
33	Handover	109	90	93–7/14	94–6/16	75–25/4	88–12/8	100–0/7	100–0/4	89–11/9	89–11/19	85–15/13	89–11/19
34	Project Evaluation Review	110	82	73–27/15	89–11/19	80–20/5	78–22/9	62–38/8	80–20/5	80–20/10	90–10/20	79–21/14	85–15/20
35	Organization Structure	109	99	100–0/14	94–6/18	100–0/4	100–0/8	100–0/8	100–0/4	100–0/9	100–0/19	100–0/13	100–0/20
36	Organizational Roles	108	94	92–8/13	94–6/18	100–0/4	94–6/8	100–0/7	100–0/3	87–13/8	94–6/18	92–8/13	95–5/20
37	Communication	108	92	93–7/14	95–5/19	80–20/5	88–12/8	88–12/8	75–25/4	89–11/9	95–5/19	93–7/14	95–5/20
38	Teamwork	108	84	86–14/14	95–5/19	80–20/5	75–25/8	88–12/8	75–25/4	67–33/9	89–11/19	86–14/14	80–20/20
39	Leadership	108	87	86–14/14	95–5/19	80–20/5	75–25/8	88–12/8	80–20/5	78–22/9	89–11/19	86–14/14	90–10/20
40	Conflict Management	108	97	86–14/14	100–0/19	100–0/5	100–0/8	88–12/8	100–0/4	100–0/9	100–0/19	100–0/13	95–5/20
41	Negotiation	108	92	93–7/14	95–5/18	100–0/5	88–12/8	100–0/8	100–0/4	78–22/9	95–5/19	86–14/14	90–10/20
42	Personnel Management	109	79	64–36/14	95–5/19	80–20/5	75–25/8	75–25/8	75–25/4	78–22/9	74–26/19	71–29/14	86–14/21

Programme management perspective on new topics

1	Portfolio Management	108	82	71–29/14	72–28/18	80–20/5	88–12/8	75–25/8	67–33/3	78–22/9	94–6/18	85–15/13	90–10/20
2	Ethics	108	90	86–14/14	94–6/18	100–0/4	88–12/8	100–0/9	100–0/3	89–11/9	83–17/18	92–8/1 3	85–15/20
3	Benefits Management	108	91	79–21/14	82–18/17	100–0/5	78–22/9	88–12/8	100–0/3	89–11/9	100–0/18	100–0/13	95–5/19
4	Critical Chain	107	69	79–21/14	67–33/18	40–60/5	88–12/8	63–37/8	60–40/5	78–22/9	65–35/20	62–38/13	70–30/20
5	Supply Chain Management	108	74	71–29/14	83–17/18	60–40/5	88–12/8	75–25/8	67–33/3	78–22/9	72–28/18	67–33/12	70–30/20
6	Stakeholder Management	108	99	100–0/14	94–6/18	100–0/5	100–0/8	100–0/8	100–0/3	100–0/9	100–0/18	100–0/13	100–0/20
7	Knowledge Management	108	90	79–21/14	94–6/18	100–0/5	100–0/8	88–12/8	100–0/3	89–11/9	89–11/18	93–7/1 5	85–15/20
8	Organizational Learning	108	88	79–21/14	82–18/17	100–0/5	88–12/8	100–0/8	100–0/3	100–0/9	100–0/18	69–31/13	85–15/20
9	Concurrent Engineering	109	62	79–21/14	67–33/18	40–60/5	37–63/8	75–25/8	67–33/3	67–33/9	56–44/18	43–57/14	70–30/20
10	Tender & Contract Management	108	97	100–0/15	100–0/18	100–0/5	100–0/8	89–11/9	100–0/3	100–0/9	94–6/18	92–8/12	100–0/20
11	Project Performance Management	108	94	93–7/14	94–6/18	80–20/5	100–0/8	88–12/8	100–0/3	100–0/9	94–6/18	92–8/13	95–5/20
12	PMSO	108	79	86–14/14	72–28/18	60–40/5	75–25/8	75–25/8	67–33/3	89–11/9	72–28/18	83–17/12	90–10/20
13	PM Competencies & Capabilities	107	83	64–36/14	89–11/18	80–20/5	88–12/8	88–12/8	33–67/3	78–22/9	88–12/17	85–15/13	90–10/20
14	PM_3	107	82	79–21/14	78–22/18	80–20/5	88–12/8	88–12/8	67–33/3	89–11/9	76–24/17	85–15/13	85–15/20
15	Uncertainty	107	81	86–14/14	83–17/18	80–20/5	75–25/8	88–12/8	67–33/3	78–22/9	82–18/17	77–23/13	80–20/20
16	Governance	107	88	97–7/14	83–17/18	80–20/5	75–25/8	88–12/8	67–33/3	78–22/9	94–6/17	92–8/13	95–5/20

Programme management perspective on topics' relevance

	BoK Topic	Business sector					Weigted average for Constn & Govt %/sample
		Rating sample tool	Total Weighted average	Construction (building), %/sample	Government, %/sample		
1	Project Management	218	100	100–0/32	100–0/41		100.00
5	Strategy/PMP	155	99	100–0/24	100–0/26		100.00
14	Change Control	126	100	100–0/22	100–0/25		100.00
17	Design, Impl'tation & Handover	121	99	100–0/14	100–0/24		100.00
24	Business Case	114	98	100–0/11	100–0/20		100.00
4	Project Success Criteria	155	99	96–4/24	100–0/27		98.12
7	Risk Management	146	96	100–0/23	96–4/26		97.88
27	Procurement	111	94	100–0/19	95–5/20		97.44
40	Conflict Management	108	97	100–0/19	95–5/20		97.44
10	Work Content & Scope Management	128	93	100–0/13	96–4/25		97.37
35	Organization Structure	109	99	94–6/18	100–0/20		97.16
16	Information Management	125	95	95–5/22	96–4/24		95.52
18	Requirements Management	118	93	95–5/21	96–4/23		95.52
2	Program Management	195	90	100–0/28	91–9/35		95.00
37	Communication	108	92	95–5/19	95–5/20		95.00
36	Organizational Roles	108	94	94–6/18	95–5/20		94.53
9	HSE	140	80	96–4/25	92–8/25		94.00
11	Time phasing/Scheduling	130	89	95–5/22	92–8/25		93.40
13	Budgeting & Cost Management	126	89	95–5/22	92–8/25		93.40
19	Estimating	118	90	90–10/21	96–4/23		93.14
26	Financial Management	113	92	95–5/19	90–10/20		92.44
39	Leadership	108	87	95–5/19	90–10/20		92.44
41	Negotiation	108	92	95–5/18	90–10/20		92.37
31	Design and development	109	89	89–11/18	95–5/19		92.08
33	Handover	109	90	94–6/16	89–11/19		91.29
12	Resource Management	128	92	95–5/22	88–12/25		91.28
6	Value Management	147	81	88–12/24	93–7/27		90.65
42	Personnel Management	109	79	95–5/19	86–14/21		90.28
29	Life Cycle Design Mgt	109	89	84–16/19	95–5/21		89.78
8	Quality Management	141	85	87–13/24	92–8/25		89.55
28	Legal Awareness	111	86	100–0/17	81–19/21		89.50
38	Teamwork	108	84	95–5/19	80–20/20		87.31
32	Implementation	110	88	89–11/19	85–15/20		86.95
34	Project Evaluation Review	110	82	89–11/19	85–15/20		86.95
3	Project Context	185	92	81–19/27	90–10/31		85.81
23	Configuration Management	115	85	85–15/20	86–14/22		85.52
22	Modelling & Testing	116	91	85–15/20	83–17/23		83.93
20	Technology Management	116	86	86–14/21	78–22/23		81.82
21	Value Engineering	117	77	76–24/21	87–13/23		81.75
15	Earned Value Management	126	81	73–27/22	85–15/26		79.50
30	Opportunity	111	72	68–32/19	70/30–20		69.03
25	Marketing & Sales	114	74	65–35/20	71–29/21		68.07

Programme management perspective on new topics

10	Tender & Contract Management	108	97	100–0/18	100–0/20		97.44
6	Stakeholder Management	108	99	94–6/18	100–0/20		94.67
11	Project Performance Management	108	94	94–6/18	95–5/20		94.53
13	PM Competencies & Capabilities	107	83	89–11/18	90–10/20		89.53
16	Governance	107	88	83–17/18	95–5/20		89.32
2	Ethics	108	90	94–6/18	85–15/20		89.26
7	Knowledge Management	108	90	94–6/18	85–15/20		89.26
3	Benefits Management	108	91	82–18/17	95–5/19		88.86
8	Organizational Learning	108	88	82–18/17	85–15/20		83.62
14	PM^3	107	82	78–22/18	85–15/20		81.68
1	Portfolio Management	108	82	72–28/18	90–10/20		81.47
12	PMSO	108	79	72–28/18	90–10/20		81.47
15	Uncertainty	107	81	83–17/18	80–20/20		81.42
5	Supply Chain Management	108	74	83–17/18	70–30/20		76.16
4	Critical Chain	107	69	67–33/18	70–30/20		68.58
9	Concurrent Engineering	109	62	67–33/18	70–30/20		68.58

Programme management perspective on topics' relevance

	BoK Topic	Business sector					Weigted average for Constn & Govt %/sample
		Rating sample tool	Total Weighted average	Construction (building), %/sample	Government, %/sample		
1	Project Management	218	100	100–0/32	100–0/41		100.00
5	Strategy/PMP	155	99	100–0/24	100–0/26		100.00
14	Change Control	126	100	100–0/22	100–0/25		100.00
17	Design, Impl'tation & Handover	121	99	100–0/14	100–0/24		100.00
24	Business Case	114	98	100–0/11	100–0/20		100.00
4	Project Success Criteria	155	99	96–4/24	100–0/27		98.12
7	Risk Management	146	96	100–0/23	96–4/26		97.88
27	Procurement	111	94	100–0/19	95–5/20		97.44
40	Conflict Management	108	97	100–0/19	95–5/20		97.44
10	Tender & Contract Management	108	97	100–0/18	100–0/20		97.44
10	Work Content & Scope Management	128	93	100–0/13	96–4/25		97.37
35	Organization Structure	109	99	94–6/18	100–0/20		97.16
16	Information Management	125	95	95–5/22	96–4/24		95.52
18	Requirements Management	118	93	95–5/21	96–4/23		95.52
2	Program Management	195	90	100–0/28	91–9/35		95.00
37	Communication	108	92	95–5/19	95–5/20		95.00
6	Stakeholder Management	108	99	94–6/18	100–0/20		94.67
36	Organizational Roles	108	94	94–6/18	95–5/20		94.53
11	Project Performance Management	108	94	94–6/18	95–5/20		94.53
9	HSE	140	80	96–4/25	92–8/25		94.00
11	Time phasing/Scheduling	130	89	95–5/22	92–8/25		93.40
13	Budgeting & Cost Management	126	89	95–5/22	92–8/25		93.40
19	Estimating	118	90	90–10/21	96–4/23		93.14
26	Financial Management	113	92	95–5/19	90–10/20		92.44
39	Leadership	108	87	95–5/19	90–10/20		92.44
41	Negotiation	108	92	95–5/18	90–10/20		92.37
31	Design and development	109	89	89–11/18	95–5/19		92.08
33	Handover	109	90	94–6/16	89–11/19		91.29
12	Resource Management	128	92	95–5/22	88–12/25		91.28
6	Value Management	147	81	88–12/24	93–7/27		90.65
42	Personnel Management	109	79	95–5/19	86–14/21		90.28
29	Life Cycle Design Mgt	109	89	84–16/19	95–5/21		89.78
8	Quality Management	141	85	87–13/24	92–8/25		89.55
13	PM Competencies & Capabilities	107	83	89–11/18	90–10/20		89.53
28	Legal Awareness	111	86	100–0/17	81–19/21		89.50
16	Governance	107	88	83–17/18	95–5/20		89.32
2	Ethics	108	90	94–6/18	85–15/20		89.26
7	Knowledge Management	108	90	94–6/18	85–15/20		89.26
3	Benefits Management	108	91	82–18/17	95–5/19		88.86
38	Teamwork	108	84	95–5/19	80–20/20		87.31
32	Implementation	110	88	89–11/19	85–15/20		86.95
34	Project Evaluation Review	110	82	89–11/19	85–15/20		86.95
3	Project Context	185	92	81–19/27	90–10/31		85.81
23	Configuration Management	115	85	85–15/20	86–14/22		85.52
22	Modelling & Testing	116	91	85–15/20	83–17/23		83.93
8	Organizational Learning	108	88	82–18/17	85–15/20		83.62
20	Technology Management	116	86	86–14/21	78–22/23		81.82
21	Value Engineering	117	77	76–24/21	87–13/23		81.75
14	PM_3	107	82	78–22/18	85–15/20		81.68
1	Portfolio Management	108	82	72–28/18	90–10/20		81.47
12	PMSO	108	79	72–28/18	90–10/20		81.47
15	Uncertainty	107	81	83–17/18	80–20/20		81.42
15	Earned Value Management	126	81	73–27/22	85–15/26		79.50
5	Supply Chain Management	108	74	83–17/18	70–30/20		76.16
30	Opportunity	111	72	68–32/19	70/30–20		69.03
4	Critical Chain	107	69	67–33/18	70–30/20		68.58
9	Concurrent Engineering	109	62	67–33/18	70–30/20		68.58
25	Marketing & Sales	114	74	65–35/20	71–29/21		68.07

	Programme management perspective on topics' relevance		Project management perspective on topics' relevance		SUMMARY
	BoK Topic	Weigted average for Constn & Govt %/sample	Weigted average for Constn & Govt %/sample	BoK Topic	Average for Programme and Project %/sample
1	Project Management	100.00	100.00	Project Management	100.00
2	Change Control	100.00	100.00	Change Control	100.00
3	Business Case	100.00	100.00	Business Case	100.00
4	Design, Impl'tation & Handover	100.00	98.92	Design, Impl'tation & Handover	99.46
5	Strategy/PMP	100.00	98.79	Strategy/PMP	99.40
6	Risk Management	97.88	100.00	Risk Management	98.94
7	Procurement	97.44	100.00	Procurement	98.72
8	Project Success Criteria	98.12	98.88	Project Success Criteria	98.50
9	Work Content & Scope Management	97.37	98.93	Work Content & Scope Management	98.15
10	Conflict Management	97.44	97.06	Conflict Management	97.25
11	Organization Structure	97.16	97.00	Organization Structure	97.08
12	Information Management	95.52	97.60	Information Management	96.56
13	Requirements Management	95.52	97.47	Requirements Management	96.50
14	Communication	95.00	97.19	Communication	96.09
15	Organizational Roles	94.53	96.58	Organizational Roles	95.55
16	Time phasing/Scheduling	93.40	97.60	Time phasing/Scheduling	95.50
17	Budgeting & Cost Management	93.40	97.58	Budgeting & Cost Management	95.49
18	Leadership	92.44	97.19	Leadership	94.81
19	Negotiation	92.37	97.18	Negotiation	94.77
20	Estimating	93.14	96.32	Estimating	94.73
21	Financial Management	92.44	95.90	Financial Management	94.17
22	HSE	94.00	94.02	HSE	94.01
23	Program Management	95.00	92.33	Program Management	93.67
24	Resource Management	91.28	95.21	Resource Management	93.24
25	Design and development	92.08	94.16	Design and development	93.12
26	Handover	91.29	93.67	Handover	92.48
27	Quality Management	89.55	95.17	Quality Management	92.36
28	Life Cycle Design Mgt	89.78	92.84	Life Cycle Design Mgt	91.31
29	Legal Awareness	89.50	93.10	Legal Awareness	91.30
30	Value Management	90.65	90.98	Value Management	90.81
31	Implementation	86.95	94.64	Implementation	90.79
32	Personnel Management	90.28	89.51	Personnel Management	89.89
33	Project Evaluation Review	86.95	92.42	Project Evaluation Review	89.68
34	Teamwork	87.31	91.35	Teamwork	89.33
35	Configuration Management	85.52	91.67	Configuration Management	88.60
36	Project Context	85.81	89.61	Project Context	87.71
37	Modelling & Testing	83.93	87.58	Modelling & Testing	85.75
38	Earned Value Management	79.50	86.06	Earned Value Management	82.78
39	Technology Management	81.82	81.13	Technology Management	81.48
40	Value Engineering	81.75	78.19	Value Engineering	79.97
41	Opportunity	69.03	82.03	Opportunity	75.53
42	Marketing & Sales	68.07	72.89	Marketing & Sales	70.48
	Programme management perspective on new topics		Project management perspective on new topics		
1	Tender & Contract Management	97.44	97.08	Tender & Contract Management	97.26
2	Stakeholder Management	94.67	97.05	Stakeholder Management	95.86
3	Project Performance Management	94.53	89.49	Project Performance Management	92.01
4	Governance	89.32	85.68	Governance	87.50
5	Knowledge Management	89.26	84.91	Knowledge Management	87.09
6	Benefits Management	88.86	82.78	Benefits Management	85.82
7	Ethics	89.26	82.10	Ethics	85.68
8	PM Competencies & Capabilities	89.53	81.67	PM Competencies & Capabilities	85.60
9	Organizational Learning	83.62	81.00	Organizational Learning	82.31
10	PMSO	81.47	82.77	PMSO	82.12
11	Uncertainty	81.42	81.43	Uncertainty	81.43
12	PM3	81.68	78.68	PM3	80.18
13	Portfolio Management	81.47	74.98	Portfolio Management	78.23
14	Supply Chain Management	76.16	78.08	Supply Chain Management	77.12
15	Concurrent Engineering	68.58	71.09	Concurrent Engineering	69.84
16	Critical Chain	68.58	68.83	Critical Chain	68.70

	Programme management perspective on topics' relevance		Project management perspective on topics' relevance		SUMMARY
	BoK Topic	Weighted average for Constn & Govt %/sample	Weighted average for Constn & Govt %/sample	BoK Topic	Average for Programme and Project %/sample
1	Project Management	100.00	100.00	Project Management	100.00
2	Change Control	100.00	100.00	Change Control	100.00
3	Business Case	100.00	100.00	Business Case	100.00
4	Design, Impl'tation & Handover	100.00	98.92	Design, Impl'tation & Handover	99.46
5	Strategy/PMP	100.00	98.79	Strategy/PMP	99.40
6	Risk Management	97.88	100.00	Risk Management	98.94
7	Procurement	97.44	100.00	Procurement	98.72
8	Project Success Criteria	98.12	98.88	Project Success Criteria	98.50
9	Work Content & Scope Management	97.37	98.93	Work Content & Scope Management	98.15
10	Tender & Contract Management	97.44	97.08	Tender & Contract Management	97.26
11	Conflict Management	97.44	97.06	Conflict Management	97.25
12	Organization Structure	97.16	97.00	Organization Structure	97.08
13	Information Management	95.52	97.60	Information Management	96.56
14	Requirements Management	95.52	97.47	Requirements Management	96.50
15	Communication	95.00	97.19	Communication	96.09
16	Stakeholder Management	94.67	97.05	Stakeholder Management	95.86
17	Organizational Roles	94.53	96.58	Organizational Roles	95.55
18	Time phasing/Scheduling	93.40	97.60	Time phasing/Scheduling	95.50
19	Budgeting & Cost Management	93.40	97.58	Budgeting & Cost Management	95.49
20	Leadership	92.44	97.19	Leadership	94.81
21	Negotiation	92.37	97.18	Negotiation	94.77
22	Estimating	93.14	96.32	Estimating	94.73
23	Financial Management	92.44	95.90	Financial Management	94.17
24	HSE	94.00	94.02	HSE	94.01
25	Program Management	95.00	92.33	Program Management	93.67
26	Resource Management	91.28	95.21	Resource Management	93.24
27	Design and development	92.08	94.16	Design and development	93.12
28	Handover	91.29	93.67	Handover	92.48
29	Quality Management	89.55	95.17	Quality Management	92.36
30	Project Performance Management	94.53	89.49	Project Performance Management	92.01
31	Life Cycle Design Mgt	89.78	92.84	Life Cycle Design Mgt	91.31
32	Legal Awareness	89.50	93.10	Legal Awareness	91.30
33	Value Management	90.65	90.98	Value Management	90.81
34	Implementation	86.95	94.64	Implementation	90.79
35	Personnel Management	90.28	89.51	Personnel Management	89.89
36	Project Evaluation Review	86.95	92.42	Project Evaluation Review	89.68
37	Teamwork	87.31	91.35	Teamwork	89.33
38	Configuration Management	85.52	91.67	Configuration Management	88.60
39	Project Context	85.81	89.61	Project Context	87.71
40	Governance	89.32	85.68	Governance	87.50
41	Knowledge Management	89.26	84.91	Knowledge Management	87.09
42	Benefits Management	88.86	82.78	Benefits Management	85.82
43	Modelling & Testing	83.93	87.58	Modelling & Testing	85.75
44	Ethics	89.26	82.10	Ethics	85.68
45	PM Competencies & Capabilities	89.53	81.67	PM Competencies & Capabilities	85.60
46	Earned Value Management	79.50	86.06	Earned Value Management	82.78
47	Organizational Learning	83.62	81.00	Organizational Learning	82.31
48	PMSO	81.47	82.77	PMSO	82.12
49	Technology Management	81.82	81.13	Technology Management	81.48
50	Uncertainty	81.42	81.43	Uncertainty	81.43
51	PM_3	81.68	78.68	PM_3	80.18
52	Value Engineering	81.75	78.19	Value Engineering	79.97
53	Portfolio Management	81.47	74.98	Portfolio Management	78.23
54	Supply Chain Management	76.16	78.08	Supply Chain Management	77.12
55	Opportunity	69.03	82.03	Opportunity	75.53
56	Marketing & Sales	68.07	72.89	Marketing & Sales	70.48
57	Concurrent Engineering	68.58	71.09	Concurrent Engineering	69.84
58	Critical Chain	68.58	68.83	Critical Chain	68.70

LIST OF PROJECT MANAGEMENT KNOWLEDGE AREA TOPICS SELECTED

	LIST OF SELECTED TOPICS	SUMMARY	COMMENTS / REMARKS	Analysis of topics adapted from Morris et al (2006) - extracted from pages C/1 - C/8 above			
				Programme management perspective on topics' relevance		Project management perspective on topics' relevance	
	BoK Topic based on 5th edition of APM BoK	Average for Programme and Project management %/sample		BoK Topics based on 4th edition topics and new topics proposed by committee for review of the APM BoK	Weighted average for Construction & Government category %/sample	Weighted average for Construction & Government category %/sample	BoK Topics based on 4th edition topics and new topics proposed by committee for review of the APM BoK
SA	Project Management	100.00	*Included*. To provide a summary of project management practice at the end of the maturity model	Project Management	100.00	100.00	Project Management
1	Change Control	100.00	*Included*.	Change Control	100.00	100.00	Change Control
SA	Business Case	100.00	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings.	Business Case	100.00	100.00	Business Case
		99.46	*Not included*. Topic redefined in revised 5th edition of APM BoK	Design, Impl'tation & Handover	100.00	98.92	Design, Impl'tation & Handover
2	Project Management Plan	99.40	*Included*.	Strategy/PMP	100.00	98.79	Strategy/PMP
3	Project Risk Management	98.94	*Included*.	Risk Management	97.88	100.00	Risk Management
4	Procurement	98.72	*Included*.	Procurement	97.44	100.00	Procurement
5	Project success criteria and benefits management	98.50	*Included*.	Project Success Criteria	98.12	98.88	Project Success Criteria
6	Scope Management	98.15	*Included*.	Work Content & Scope Management	97.37	98.93	Work Content & Scope Management
		97.26	*Not included*. Considered as part of 'Procurement'	Tender & Contract Management	97.44	97.08	Tender & Contract Management
		97.25	*Not included*. Considered as part of 'Negotiation'	Conflict Management	97.44	97.06	Conflict Management
7	Organization Structure	97.08	*Included*.	Organization Structure	97.16	97.00	Organization Structure
8	Information Management	96.56	*Included*.	Information Management	95.52	97.60	Information Management
		96.50	*Not included*. Considered as part of 'Scope management'	Requirements Management	95.52	97.47	Requirements Management
9	Communication	96.09	*Included*.	Communication	95.00	97.19	Communication
10	Stakeholder Management	95.86	*Included*.	Stakeholder Management	94.67	97.05	Stakeholder Management
		95.55	*Not included*. Considered as part of 'Organisation structure'	Organizational Roles	94.53	96.58	Organizational Roles
11	Scheduling	95.50	*Included*.	Time phasing/Scheduling	93.40	97.60	Time phasing/Scheduling
12	Budgeting & Cost Management	95.49	*Included*.	Budgeting & Cost Management	93.40	97.58	Budgeting & Cost Management
		94.81	*Not included*. Since the expected 'leaders' in the organisation have been selected for the interviews	Leadership	92.44	97.19	Leadership
13	Negotiation	94.77	*Included*.	Negotiation	92.37	97.18	Negotiation
14	Estimating	94.73	*Included*.	Estimating	93.14	96.32	Estimating
SA	Project financing and funding	94.17	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings.	Financial Management	92.44	95.90	Financial Management
15	Health, safety and environmental management	94.01	*Included*.	HSE	94.00	94.02	HSE
SA	Program Management	93.67	*Included*. To provide a summary of programme management practice at the end of the maturity model	Program Management	95.00	92.33	Program Management
16	Resource Management	93.24	*Included*.	Resource Management	91.28	95.21	Resource Management
		93.12	*Not included*. Considered as part of 'Life cycle design management'	Design and development	92.08	94.16	Design and development
		92.48	*Not included*. Considered as part of 'Life cycle design management'	Handover	91.29	93.67	Handover
17	Project Quality Management	92.36	*Included*.	Quality Management	89.55	95.17	Quality Management

LIST OF PROJECT MANAGEMENT KNOWLEDGE AREA TOPICS SELECTED

	LIST OF SELECTED TOPICS	SUMMARY	COMMENTS / REMARKS	Analysis of topics adapted from Morris et al (2006) - extracted from pages C/1 - C/8 above			
				Programme management perspective on topics' relevance		Project management perspective on topics' relevance	
	BoK Topic based on 5th edition of APM BoK	Average for Programme and Project management %/sample		BoK Topics based on 4th edition topics and new topics proposed by committee for review of the APM BoK	Weighted average for Construction & Government category %/sample	Weighted average for Construction & Government category %/sample	BoK Topics based on 4th edition topics and new topics proposed by committee for review of the APM BoK
		92.01	*Not included*. Considered to be spread across the 5th edition of APM BoK, especially in 'Earned value management'	Project Performance Management	94.53	89.49	Project Performance Management
18	Project life cycles	91.31	*Included*.	Life Cycle Design Mgt	89.78	92.84	Life Cycle Design Mgt
19	Legal Awareness	91.30	*Included*.	Legal Awareness	89.50	93.10	Legal Awareness
20	Value Management	90.81	*Included*.	Value Management	90.65	90.98	Value Management
		90.79	*Not included*. Considered as part of 'Life cycle design management'	Implementation	86.95	94.64	Implementation
21	Human Resource Management	89.89	*Included*.	Personnel Management	90.28	89.51	Personnel Management
		89.68	*Not included*. Considered as part of 'Life cycle design management'	Project Evaluation Review	86.95	92.42	Project Evaluation Review
SA	Teamwork	89.33	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings.	Teamwork	87.31	91.35	Teamwork
		88.60	*Not Included*.	Configuration Management	85.52	91.67	Configuration Management
		87.71	*Not Included*. But all analysis will be put into context.	Project Context	85.81	89.61	Project Context
		87.50	*Not Included*.	Governance	89.32	85.68	Governance
SA	Learning and development	87.09	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings. [referred to as Learning and development]	Knowledge Management	89.26	84.91	Knowledge Management
		85.82	*Not included*. Considered as part of 'Project success criteria'	Benefits Management	88.86	82.78	Benefits Management
		85.75	*Not Included*.	Modelling & Testing	83.93	87.58	Modelling & Testing
		85.68	*Not Included*.	Ethics	89.26	82.10	Ethics
		85.60	*Not Included*. Not a new topic in 5th edition of APM BoK	PM Competencies & Capabilities	89.53	81.67	PM Competencies & Capabilities
		82.78	*Not Included*.	Earned Value Management	79.50	86.06	Earned Value Management
SA	Learning and development	82.31	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings. [referred to as Learning and development]	Organizational Learning	83.62	81.00	Organizational Learning
SA	Project Office	82.12	*Included:* To provide a summary of project management practice at the end of the maturity model	PMSO	81.47	82.77	PMSO
		81.48	*Not Included*.	Technology Management	81.82	81.13	Technology Management
		81.43	*Not Included*. Not a new topic in 5th edition of APM BoK	Uncertainty	81.42	81.43	Uncertainty
		80.18	*Not Included*. Not a new topic in 5th edition of APM BoK	PM_3	81.68	78.68	PM_3
		79.97	*Not Included*. Considered as part of 'Value management'	Value Engineering	81.75	78.19	Value Engineering
		78.23	*Not Included*. Considered as part of 'Programme management'	Portfolio Management	81.47	74.98	Portfolio Management
		77.12	*Not included*. Considered to be covered in 'Procurement' in the 5th edition of APM BoK.	Supply Chain Management	76.16	78.08	Supply Chain Management
		75.53	*Not included*. Considered as part of 'Life cycle design management'	Opportunity	69.03	82.03	Opportunity
		70.48	*Not Included*.	Marketing & Sales	68.07	72.89	Marketing & Sales
		69.84	*Not Included*. Not a new topic in 5th edition of APM BoK	Concurrent Engineering	68.58	71.09	Concurrent Engineering
		68.70	*Not Included*. Not a new topic in 5th edition of APM BoK	Critical Chain	68.58	68.83	Critical Chain

LIST OF PROJECT MANAGEMENT KNOWLEDGE AREA TOPICS SELECTED

	LIST OF SELECTED TOPICS	SUMMARY	COMMENTS / REMARKS
	BoK Topic based on 5th edition of APM BoK	Average for Programme and Project management %/sample	
1	Change Control	100.00	*Included*.
2	Project Management Plan	99.40	*Included*.
3	Project Risk Management	98.94	*Included*.
4	Procurement	98.72	*Included*.
5	Project success criteria and benefits management	98.50	*Included*.
6	Scope Management	98.15	*Included*.
7	Organization Structure	97.08	*Included*.
8	Information Management	96.56	*Included*.
9	Communication	96.09	*Included*.
10	Stakeholder Management	95.86	*Included*.
11	Scheduling	95.50	*Included*.
12	Budgeting & Cost Management	95.49	*Included*.
13	Negotiation	94.77	*Included*.
14	Estimating	94.73	*Included*.
15	Health, safety and environmental management	94.01	*Included*.
16	Resource Management	93.24	*Included*.
17	Project Quality Management	92.36	*Included*.
18	Project life cycles	91.31	*Included*.
19	Legal Awareness	91.30	*Included*.
20	Value Management	90.81	*Included*.
21	Human Resource Management	89.89	*Included*.
SA	Project Management	100.00	*Included*. To provide a summary of project management practice at the end of the maturity model
SA	Business Case	100.00	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings.
SA	Project financing and funding	94.17	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings.
SA	Program Management	93.67	*Included*. To provide a summary of programme management practice at the end of the maturity model
SA	Teamwork	89.33	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings.
SA	Learning and development	87.09	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings. [referred to as Learning and development]
SA	Learning and development	82.31	*Not included* in maturity model. But *included* in data collection process to provide critical information for analysis of findings. [referred to as Learning and development]
SA	Project Office	82.12	*Included*: To provide a summary of project management practice at the end of the maturity model

LIST OF PROJECT MANAGEMENT KNOWLEDGE AREA TOPICS SELECTED FOR 'PROJECT MANAGEMENT MATURITY MODEL'

S/No.	APMBOK No	LIST OF SELECTED TOPICS
		Section 2: Planning the strategy
1	2.1	Project success criteria and benefits management
2	2.2	Stakeholder Management
3	2.3	Value Management
4	2.4	Project Management Plan
5	2.5	Project Risk Management
6	2.6	Project Quality Management
7	2.7	Health, safety and environmental management
		Section 3: Executing the strategy
8	3.1	Scope Management
9	3.2	Scheduling
10	3.3	Resource Management
11	3.4	Budgeting & Cost Management
12	3.5	Change Control
13	3.7	Information Management
		Section 4: Techniques
14	4.3	Estimating
		Section 5: Business and commercial
15	5.4	Procurement
16	5.5	Legal Awareness
		Section 6: Organisation and Governance
17	6.1	Project life cycles
18	6.7	Organization Structure
		Section 7: People and the profession
19	7.1	Communication
20	7.5	Negotiation
21	7.6	Human Resource Management
		Section 1: Project management in context
SA	1.6	Project Office
SA	1.2	Program Management
SA	1.1	Project Management
	SA: To provide a summary of project management practice at the end of the maturity model	
		Additional topics not part of maturity model, but considered for data collection
SA	5.1	Business Case
SA	5.3	Project financing and funding
SA	7.2	Teamwork
SA	7.8	Learning and development
		Learning and development
	SA: Not included in maturity model. But included in data collection process to provide critical information for	

APPENDIX D

PROJECT MANAGEMENT MATURITY MODEL							
	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
			Initial / Ad-hoc but aware - Individual experience	**Repeatable / Basic**	**Defined / Established - organisational**	**Managed / Comprehensive - organisational**	**Optimised / Best practice – continuous improvement**
	2	**Planning the strategy**					
1	2.1	**Project success and benefit management** Project success refers to the satisfaction of the criteria of stakeholder needs and is measured by the success criteria as identified and agreed at the start of a project (APM, 2006). Success criteria are measures against which project success or failure can be judged. Key performance indicators (KPIs) are used to measure project success. Success factors are the management systems put in place to ensure project success. Success of a project is usually determined at handover and closeout and lies mainly within the project manager's jurisdiction. Benefits management refers to the identification and agreeing of project benefits at an organisational level and their monitoring and management throughout the life of the project (APM, 2006). Benefits can be measured quantitatively or qualitatively. Benefits may not be realised until after handover (i.e. during the life of a project) and usually lies within the project sponsor's jurisdiction. Key references: APM, 2006; Harpum, 2004; Cooke – Davies, 2004b; OGC, 2006	The organisation is aware of project success factors and benefits only at milestone stages in form of general statements. Stakeholders not usually involved in determining and monitoring project success criteria and benefits. Tools and techniques such as KPIs are not used on projects. Project success and benefits management is only done at an ad-hoc level. There is no / inadequate organisational infrastructure for identifying and tracking success and benefits criteria.	There is basic identification and measurement of project success criteria and benefits. Clear and unambiguous definition of project objectives is established with project stakeholders to enable detailing of success criteria. Identifies KPIs for projects and has techniques for measuring project benefits. There is limited infrastructure to support project success and benefits management – usually reserved to large projects. Project success and benefit management only done for large noticeable projects involving professionals that are more experienced.	There is standard process for identifying, detailing and managing project success factors involving stakeholders at all stages. There is a standard procedure for establishing and detailing key performance indicators (KPIs) to suit project contexts. There is a benefits management strategy used on majority of projects and programmes. Project benefits are identified, detailed, agreed and monitored throughout the life of projects with full involvement of all project stakeholders. Processes and procedures are usually modified to suit project contexts. Infrastructure is adequate in meeting challenges of project contexts.	Fully operational project success management system with identification and management of success criteria and KPIs tied to organisational strategy. Fully operational benefits management strategy aligned to organisational strategy. Standard performance metrics are used for establishing and planning projects & programmes and assessing their performance against initial plans. There is a database of project performance measurements for projects. Available infrastructure to support project reviews and building data base for lessons learnt.	Lessons learned are evaluated and used to improve benefits management strategy and system. The organisation continuously improves its high standards and procedures, which are modified to suit changing circumstances.

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PROJECT MANAGEMENT MATURITY MODEL							
	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
			Initial / Ad-hoc but aware - Individual experience	**Repeatable / Basic**	**Defined / Established - organisational**	**Managed / Comprehensive - organisational**	**Optimised / Best practice – continuous improvement**

2	2.2	**Stakeholder management**
		
		Stakeholder management is the systematic identification, analysis and planning of actions to communicate with, negotiate with and influence stakeholders. Stakeholders are those who have an interest or role in a project or are affected by the project (APM, 2006).
		
		Managing stakeholders involves
		- identifying potential internal and external stakeholders
		  o e.g. using brainstorming, etc
		- analysing their position in relation to the project, considering
		  o their power to influence project outcome positively or negatively
		  o their interest for or against the project
		  o how the project impacts on them – beneficially or harmfully
		- developing a methodology for managing stakeholders by maximising positive aspects of interest, power and impact while minimising effects of negative ones
		
		Use of tools and techniques such as
		- power/interest matrix or stakeholder grid to analyse stakeholders
		- Use of project communications plan to develop stakeholders profile, their communication needs and establish how & who is responsible for managing them.
		
		Stakeholder management should be done iteratively throughout the project life cycle since interest and power may change.
		
		Key references: APM, 2006; Winch, 2004; Cleland, 1998; OGC, 2006
			The organisation is aware of stakeholders. But, stakeholders are not fully involved.
			
			There are no tools and techniques for stakeholder analysis.
			
			There is no established procedure for managing stakeholders.
			
			Organisational infrastructure for effective stakeholder management is low / poor.
				Major stakeholders are identified and involved in projects only when the need arises.
				
				Basic approach used in identifying stakeholders, with little emphasis on analysis of power, impact and interest.
				
				Processes exist for dealing with project stakeholders, including communication of project information, progress status, etc. However, the processes are not standardised.
				
				There is basic infrastructure only adequate to communicate with stakeholders.
					Stakeholders are identified and involved at all stages of projects.
					
					There is a standard stakeholder management methodology in the organisation. The methodology allows project managers to develop strategy for identifying, analysing and managing stakeholders in their projects.
					
					There is a standardised stakeholder analysis method involving the use of tools and techniques such as stakeholder matrix to determine power, interest and impact of stakeholders.
					
					Communication with stakeholders is intensive and there is adequate infrastructure for the activities involved.
						Fully operational stakeholder management system aligned to the organisation's strategy and other policies.
						
						Dedicated infrastructure adequately provided in meeting needs for communication and reporting procedure in the organisation's stakeholder management process.
						
						Stakeholder management strategies are assessed and reviewed regularly with senior management involvement.
						
						Regular reviews include feedback from stakeholders.
							Lessons learned are evaluated and used to improve stakeholder management strategy and system.
							
							The organisation continuously improves its high standards and procedures, which are modified to suit changing circumstances.

APPENDIX D

PROJECT MANAGEMENT MATURITY MODEL							
	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
			Initial / Ad-hoc but aware - Individual experience	**Repeatable / Basic**	**Defined / Established - organisational**	**Managed / Comprehensive - organisational**	**Optimised / Best practice – continuous improvement**
3	2.3	**Value management** Value management (VM) is a structured approach to defining what value means to an organisation. It is also a framework that allows needs, problems, or opportunities to be defined and then enables review of whether the initial project objectives can be improved to determine the optimal approach and solution (APM, 2006). Value is defined as a ratio of the 'satisfaction of needs' and 'the resources required to achieve the needs'. Needs may be function, quality, worth, benefit, performance; while resources are usually in terms of cost and investment (Thiry, 2004). Value management combines value engineering (VE) and value analysis (VA). Organisations carrying out value management combine value methodologies with other organisational methodologies (at strategy and operational level) to improve organisational effectiveness (Thirty, 2004). Value methodologies include using: - cross functional teams in workshop environment to aid in project value issues - structured process based on creative & innovative thinking and analysis - the use of functions in terms of the needs for a project rather than the solution 'Soft' VM is carried out at strategy level or in early project stages, while 'hard' VM relies on techniques of VE and VA at later stages. Key references: APM, 2006; Thiry, 2004.	The organisation is aware of the concept of project value, however it is not well used and supported. Stakeholders are not usually involved in value management. There are no tools and techniques used for value management. There is no established procedure for managing value in projects. Value management is usually based on experience of senior management. Organisational infrastructure for effective value management is low / poor.	The organisation is fully aware of the project value concept. However, an established value management practice is not supported for projects and programmes. Stakeholders are involved in managing value right from planning stages. Basic techniques are used to identify and improve value management process of projects. Processes exist for dealing with value management, such as function vs. cost analysis, etc. However, the processes are not standardised. There is basic organisational infrastructure only adequate to assist in value management processes.	The organisation is fully aware of value management. There is a standard value management methodology. The methodology allows involvement of organisation's employees and project stakeholders in determining and analysing value attributes of projects, and finding optimal solutions. Efforts are made towards integrating VA and VE into value management process at all stages of projects. Cross functional teams are used involving project stakeholders in all value management processes. There is adequate organisational infrastructure, in meeting demands of vale management system.	Fully operational value management system aligned to the organisation's strategy and other policies. Dedicated infrastructure adequately provided in meeting needs for value management processes including cross-functional workshops, etc. Value management strategies are assessed and reviewed regularly with senior management involvement. Standard procedure for measuring performance on value management system Reviews include feedback from stakeholders.	Lessons learned are evaluated and used to improve value management system. The organisation continuously improves its high standards and procedures, which are modified to suit changing circumstances.

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PROJECT MANAGEMENT MATURITY MODEL							
	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 **Initial / Ad-hoc but aware - Individual experience**	LEVEL 2 **Repeatable / Basic**	LEVEL 3 **Defined / Established - organisational**	LEVEL 4 **Managed / Comprehensive - organisational**	LEVEL 5 **Optimised / Best practice – continuous improvement**
4	2.4	**Project management plan (PMP)** The PMP documents the outcomes of the planning process and provides a reference document for managing all aspects of a project (APM, 2006). The PMP also describes policies and plans for managing changes, communication, configuration, risk, governance, health, safety and environment issues and quality, etc. A PMP should be developed during the planning process, incorporating other aspects such as scope management, scheduling, resource management, budgeting and cost management. A project manager owns the PMP, but it should be developed (and shared with the whole project team). The PMP should be agreed with the project sponsor (at strategic level) and other stakeholders, before being put into use. Once agreed, the PMP will serve as a baseline of how the project will be managed (defining the why, what, how, how much, when, where of the project). PMP is also called the project execution plan, Key references: APM, 2006; OGC, 2006	The organisation does not use PMP for its projects. The management is aware of some of the components of PMP, but they are seldom used. Stakeholders are not fully involved in planning process. There are no tools and techniques used for developing PMP and its components. There is no established procedure for developing PMP. Ad-hoc project planning is done through the experience of senior management, rather than project managers. Communication and operational infrastructure for effective development of PMP is not supported.	Some components of a project management plan such as project goals, project scope, cost and time schedules, quality requirements, project governance, risk management strategy, etc are identified and used in planning projects. But these are only done at basic level. PMP are developed and shared with some stakeholders. PMP is used on some (mainly large) projects. However, they are not standardised and there is no documented procedure for using it in the organisation. Efforts are made to update and review the PMP as the project progresses to reflect milestones. There is basic organisational infrastructure only adequate to support some aspects of using PMP.	Project and programme managers are fully aware of the importance of using PMP. Standardised PMP are used by project managers. PMP are developed and shared with project teams and stakeholders. Changes to PMP is done in a controlled manner involving all stakeholders. PMPs serve as a baseline for monitoring and change control process. There is a standard procedure, policy and format for developing PMP for all projects and programmes. The methodology allows involvement of the project team and project stakeholders in planning processes. There is adequate organisational infrastructure and ICT in meeting demands of the PMP procedure.	Fully implemented project management procedure using PMP in all projects. PMP is updated and reviewed at all project stages. Dedicated organisational infrastructure adequately provided in meeting needs for PMP use, including ICT, reporting and authorisation procedures. PMP procedure, policy and formats are assessed and reviewed regularly with senior management involvement. PMP are used flexibly to reflect differing project contexts. Standard procedures are used for measuring performance of PMP on projects. Reviews include feedback from stakeholders.	Lessons learned are evaluated and used to improve PMP procedure and formats. The organisation continuously improves its high standards and procedures, which are modified to suit changing circumstances.

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PROJECT MANAGEMENT MATURITY MODEL							
	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
			Initial / Ad-hoc but aware - Individual experience	**Repeatable / Basic**	**Defined / Established - organisational**	**Managed / Comprehensive - organisational**	**Optimised / Best practice – continuous improvement**

5	2.5	**Project risk management**
		
		Project risk management is a structured process that allows individual risk events and overall project risk to be understood and managed proactively, thereby optimising project success by minimising threats and maximising opportunities (APM, 2006).
		
		Risks are defined as an uncertain event or set of circumstances that can have an effect on the achievement of project objectives. Such effects may be positive or negative.
		
		Structured risk management process should be embedded into the project management process, carried out iteratively throughout the project life cycle, and involve all stakeholders.
		
		Risk management process involves the following:
		
		- Risk initiation and strategy development
		- Risk identification
		- Risk analysis
		  o Qualitative methods, e.g. risk matrix
		  o Quantitative analysis, e.g. Monte Carlo
		- Risk responses
		  o Threats: avoid/cancel, transfer, reduce/mitigate, accept/absorb
		  o Opportunities: share, exploit, enhance, accept
		  o Provide contingencies, including cost, time, resources, etc
		- Iterative risk control and monitoring
		- Use of risk register throughout the project
		
		Key references: APM, 2006; OGC, 2006; APM, 2004; Chapman, 2003, Simister, 2004; PMI, 2004
			Although the organisation recognises risks, their responses are reactive. There is little involvement of stakeholders in dealing with risks.
			
			The organisation does not have a risk management process in place.
			
			There are no tools and techniques used for managing risks.
			
			There is little organisational infrastructure to support the management of risks.
				The organisation is fully aware of project risks. The basic processes they use are not formally documented, standardised and used organisation wide.
				
				Stakeholders are involved in managing risks, usually for large projects.
				
				Basic techniques and tools are used to identify and manage risks.
				
				High-level quantitative and qualitative risk analysis are not carried. But contingencies for time, cost, etc are provided.
				
				There is basic organisational infrastructure only adequate in assisting some aspects of the risk management processes.
					There is a formal risk management process used for all projects.
					
					The organisation's risk management process involves developing risk strategy during planning stages and identifying risks with early involvement of project team and stakeholders.
					
					Qualitative and quantitative analysis tools and techniques such as probability/impact matrix, Monte Carlo simulation, etc are used on all projects when necessary.
					
					Project and programme managers use risk registers for all projects. Risk responses are planned and ownership/responsibility assigned.
					
					Project team and stakeholders are all involved in the iterative risk management process.
					
					There is adequate organisational infrastructure and ICT in meeting demands of the risk management process.
					
					There is a dedicated team for risk management on complex and large projects.
						The organisation has a fully implemented iterative risk management process, involving project teams and stakeholders.
						
						Risk management procedures are tied to the organisational strategy and objectives.
						
						There is dedicated organisational infrastructure provided in meeting needs for risk management system, including ICT, reporting and authorisation procedures.
						
						Risk management processes are assessed and reviewed regularly.
						
						Standard procedure used for measuring performance of risk management process. Reviews include feedback from stakeholders.
							Lessons learned are evaluated and used to improve risk management processes.
							
							The organisation continuously improves its high standards and procedures, which are modified to suit changing circumstances.

APPENDIX D

PROJECT MANAGEMENT MATURITY MODEL							
	APM BoK Topic No.	PROJECT MANAGEMENT KNOWLEDGE AREAS	LEVEL 1 **Initial / Ad-hoc but aware - Individual experience**	LEVEL 2 **Repeatable / Basic**	LEVEL 3 **Defined / Established - organisational**	LEVEL 4 **Managed / Comprehensive - organisational**	LEVEL 5 **Optimised / Best practice – continuous improvement**
6	2.6	**Project quality management** **Project quality management** is a discipline applied to ensure that both the outputs of a project and the processes by which the outputs are delivered meet the required needs of project stakeholders. **Quality** is broadly defined as fitness for purpose or narrowly as the degree of conformance of outputs and process (APM, 2006). Quality management has 4 processes - Quality planning: involves establishing the requirements of quality in a project including consideration of the trade off between scope, time, cost and quality. - Quality assurance: provides confidence to stakeholders that project quality requirements will be met. It involves consistent use of standards and procedures and independent reviews and quality audits. - Quality control: verifies that project deliverables conform to specification through inspections, testing, quality measurement, etc. - Continuous improvement: is a characteristic of organisations that show a continual systematic approach to improvement, achieving project quality without wasting time of resources in the process. Key references: APM, 2006; OGC, 2006	The organisation is making efforts to understand the nature of expected quality standards for its activities. As a result, quality planning process in not well established. Quality assurance and quality control measures are not taken but the organisation strives to manage quality based on experienced management or external input. No tools and techniques are available to enhance quality management. The organisation does not have quality standards and practices. There is no organisational infrastructure within the organisation to support quality management.	The organisation defines the level of quality required for its activities but quality management system is not fully established. Some aspects of quality assurance and control such as inspections, testing, auditing, etc are carried out on projects and programmes. However, they are not yet an organisational procedure and practice. Organisational infrastructure is inadequate in meeting requirements.	Quality requirements are well described, established and used for all projects. Quality assurance and control are carried out as an organisational standard and procedure. Project teams and stakeholders are involved in quality management practices and are required to conform to the practices. There is adequate organisational infrastructure in meeting demands of the quality management process.	The organisation has a fully implemented total quality management process for both internal and external projects. Quality management procedures are tied to the organisational strategy and objectives. There is dedicated organisational infrastructure provided in meeting needs of quality management system, including ICT, reporting and authorisation procedures. Quality management processes are assessed and reviewed regularly. Standard procedure are used for measuring performance of quality management process. Reviews include feedback from stakeholders.	Lessons learned are evaluated and used to improve the quality management processes. The organisation continuously improves its high standards and procedures, which are modified to suit changing circumstances.

STRUCTURE OF INTERVIEW WITH FCDA

Title of research

PROJECT MANAGEMENT PRACTICE IN NIGERIAN PUBLIC SECTOR ORGANISATIONS: *A Case study*

Aim of the study

The **aim of the research is to investigate how public sector organisations in Nigeria apply PM practices**. The research would focus on a case study of the Federal Capital Development Authority (FCDA). It would involve **assessing the present project management practice in FCDA**; **identifying strengths and weaknesses and key areas for organisational improvement and change management**.

About Federal Capital Development Authority (FCDA)

- FCDA is the Government body responsible for development projects in the Federal Capital Territory, Abuja, Nigeria.
- It operates under the Federal Capital Territory Administration (FCTA) headed by the Minister, Federal Capital Territory (FCT) under delegation of the President of the Federal Republic of Nigeria.
- Day to day activities of FCDA is headed by the Executive Secretary.
- The organisation comprises seven departments, which are also affiliated to other departments within the FCTA.
    - Departments include Engineering Services; Public Buildings; Resettlement and Compensation; Urban and Regional Planning; Mapping and Survey; Administration and Finance; and Special Duties.

Aim of the interview

The aim of the interview for the research is to develop an understanding of the level to which FCDA (or the department) uses project management knowledge areas so as to establish a maturity and competence level representative of the organisation.

Some of the organisation's documentation will also be reviewed.

The interviews would also seek to understand the socio–cultural, political, institutional, educational and economic factors and other barriers affecting the use of the project management knowledge areas.

About 28 knowledge areas have been selected for the research from the Association of Project Management (APM) Body of Knowledge (5th edition, 2006).

INTERVIEW STRUCTURE

SECTION A: PERSONAL BACKGROUND

1. What is your position and responsibilities in the organisation?
2. How long have you worked in the organisation?
3. What is your educational background?
4. Do you have project management training and experience?
5. How many years experience do you have in managing projects?

SECTION B: GENERAL ORGANISATIONAL INFORMATION

1. How is the Department's ORGANISATION STRUCTURED?
2. What TYPE of ACTIVITIES and SERVICES does the department (or organisation) carry out?
3. Does the department carry out PROJECTS?
   a. What is the nature of PROJECTS carried out (e.g. Construction, Engineering, ICT, etc)
4. How would you compare the amount of PROJECTS carried out in relation to FUNCTIONAL (Business as usual / Operational) activities carried out
   a. In terms of VOLUME of work for the department
   b. COST of operations of the organisation
   c. TIME spent in all activities
   d. Give a summary ratio in ratio of 100% (e.g. 60 : 40)
5. How many EMPLOYEES are in the department?
6. HOW does the department get its FUNDS?
   a. INTERNALLY GENERATED (direct from Federal Govt. OR FCTA)
   b. EXTERNALLY
7. How much DECISIONS and INFLUENCE on selection of projects are made by FCDA as compared to those from the higher organisational level (FCTA, Federal government)? Do you make BUSINESS CASES for your projects?
8. Are projects carried out by or with support of
   a. IN – HOUSE EMPLOYEES, or
   b. EXTERNAL CONSULTANTS, CONTRACTORS, etc?

INTERVIEW STRUCTURE (Cont'd)

SECTION: C PROJECT MANAGEMENT MATURITY

Questions are applicable for each KNOWLEDGE AREAS OF PROJECT MANAGEMENT

NOTE: X represents a Project management knowledge area

[The interviewer will briefly mention the knowledge area and then ask questions]

1. General questions for knowledge areas
    a. To what extent does FCDA (or the department) carry out X in its projects
    b. How does FCDA (or the department) carry out X
    c. Is there any document(s) / policy / plan / procedure / guidelines / that detail how X should be carried out by FCDA (or the department)
        i. Standard procedures
        ii. Etc
    d. Is a similar or different procedure used by FCDA (or the department) to deal with X for all projects
    e. Which tools and/or techniques do you use to support X
    f. Which organisational infrastructure, facilities or methods are used to support X
    g. Does FCDA (or the department) evaluate its performance in carrying out X
    h. Does FCDA (or the department) find ways of improving its processes for X
    i. Does FCDA (or the department) carry out / sponsor training and development of staff in X
        a. Senior management
        b. Middle line employees
        c. Junior employees
2. Additional questions would be asked based on specific PM Knowledge areas

3. OVERALL: How important is X in the management of projects carried out by FCDA (or the department) – on a scale of 1 to 5 showing level of importance.
    - To assist in determining a weighing factor for PM knowledge areas

INTERVIEW STRUCTURE (Cont'd)

SECTION D: ADDITIONAL INFORMATION ON FCDA'S PROJECT MANAGEMENT PRACTICE

1. Can you give an example of your experience in a project in FCDA [OPTIONAL]

   a. As a project manager, project sponsor, project officer, etc

   b. Based on generic project management process:

   Concept / initiation – Definition / planning – Monitoring and control – Closing / review

   c. How would you rate the performance of the project

2. Do the departments within FCDA coordinate within themselves to carry out projects?

3. Need for change and improvement?

   a. WILL THERE BE BENEFITS (for FCDA) if there is an introduction OR change to improve project management procedure and processes? Give examples

   b. Will such CHANGE be supported organisation-wide?

4. What barriers exist in being able to develop a structured project management procedure and process? For example
   a. Political
   b. Economic / Financial
   c. Socio – cultural
   d. Technological
   e. Environmental
   f. Legal
   g. Educational
   h. Etc

ADDITIONAL INFORMATION ON FEDERAL CAPITAL DEVELOPMENT AUTHORITY

1.0 HISTORICAL BACKGROUND

Nigeria's Federal Capital Territory (FCT), Abuja, was created to tackle the challenges and issues faced in the former capital, Lagos. Issues at stake in 1975 were 'poor topography/lack of expandable land; dual role of Lagos being a State and Federal Capital; remoteness of Lagos from most parts of the country; intractable traffic congestion; housing and environmental issues; domination by one major ethnic group; vulnerability to external aggression' (Alhassan, 2008).

The Dr. Akinola Aguda panel, set up by the Federal Government in 1975 to examine these issues, recommended that the nation's capital be removed from Lagos and be sited in a vast, virgin territory in the county's heartland, thereby selecting the present location of the Federal Capital Territory (PRCU, 2005). Key considerations included centrality, land availability, low population density, natural drainage, physical planning convenience (Alhassan, 2008).

As a result, the FCDA was setup by Decree No. 6 of 1976 with the following responsibilities:

(a) 'The choice of site for the location of the Capital City within the Capital Territory;
(b) The preparation of a master plan for the Capital City and the land use with respect to town and country planning within the rest of the Capital Territory;
(c) The provision of municipal services within the Federal Capital Territory;
(d) The establishment of infrastructural services in accordance with the master plan;
(e) The co-ordination of the activities of all Ministries, Departments and Agencies of the Government of the Federation within the Federal Capital Territory.' (Alhassan, 2008)

FCDA has evolved since its creation in 1976. Presently, it operates under the Federal Capital Territory Administration (FCTA) headed by the Minister, FCTA, who acts under delegation of the President of the Federal Republic of Nigeria. Constitutionally, the administration of the FCT is governed as a State, rather than as a Ministry (Constitution of the Federal Republic of Nigeria, 1999, Sections 297 – 304). Additional Mandate Secretariats, Departments and Agencies created within the wider FCTA deal with other aspects of administering the City such as health, education, social development, transport, development control, etc. The organization structure of the FCTA is presented in page F/3. FCDA is a unique body within the FCTA organisation structure.

FCDA's responsibilities were revised in 2004 as follows:

(a) 'Provision of Engineering Infrastructure to the city.

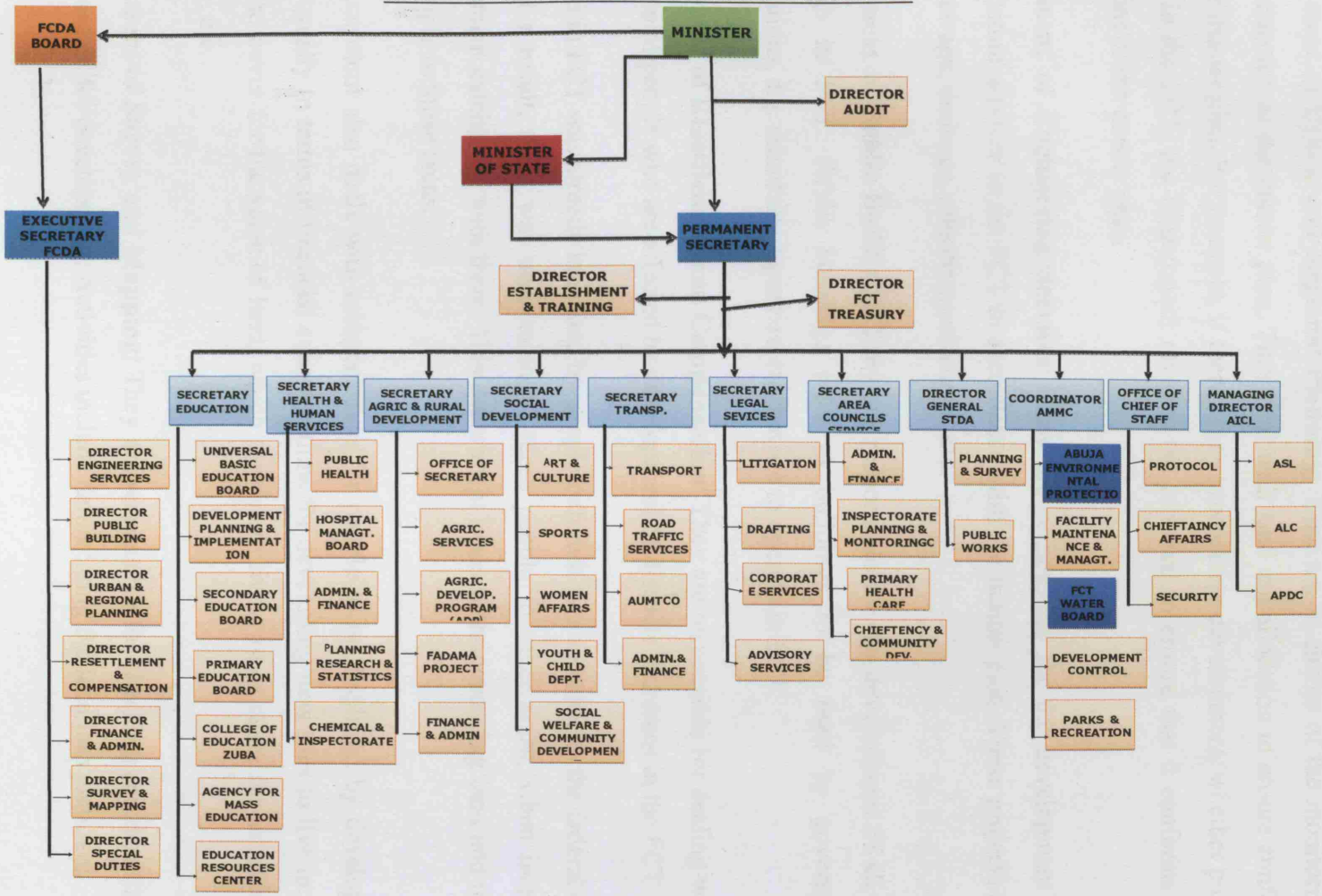
(b) Provision of Public Buildings.

(c) Urban and Regional Planning of the city and the Territory.

(d) Valuation and Payment of Compensation of displaced communities.

(e) Macro Survey Activities.' (Alhassan, 2008).

ORGANISATION STRUCTURE OF THE FEDERAL CAPITAL TERRITORY ADMINISTRATION SHOWING WHERE FCDA LIES WITHIN IT



Source: Executive Secretary's office, FCDA (2008)

2.0 ACTIVITIES AND SERVICES CARRIED OUT

Department of Urban and Regional Planning: They are in charge of the monitoring the implementation of the master plan. They deal with land use allocation to ensure conformity with the master plan. For example, if there is any prospective development, whether public or private in the FCT, the Department reviews the proposal to ensure that it conforms to the provisions of the master plan.

Department of Engineering Services: They are responsible for the development of all infrastructure services in the FCT in accordance with the master plan. These projects are for roads, sewage, drainage, telecommunications, etc.

Department of Public Buildings: They are responsible for the development of all public buildings in FCT. Public buildings refer to buildings to be used by governmental organisations, e.g. ministries, agencies, etc that are to operate in FCT.

Department of Resettlement and Compensation: They are responsible for dealing with re–allocation of people who are affected by development of districts and areas in the FCT.

The land in FCT was already inhabited by people before it was selected as the federal capital city. As a result, there was need to move these people to other areas, when increasing development catches up with them. This department deals with identifying land and moving such people to those areas.

The department also deals with compensation for people to be displaced by development. This is usually in terms of financial considerations for developing new sites to live in. It can also be to cover for the value of land, which they were living in or using for activities like farming, etc.

Department of Survey and Mapping: They are responsible for checking and detailing any land allocated for development. Activities include demarcating the land into plots, etc.

Department of Finance and Administration: This is the service department in the organisation. First, it takes care of all financial issues for the organisation. This ranges from budgeting, remuneration and benefits for employees to payments certified to external organisations (e.g. contractors) by technical officers and departments in the organisation.

It also deals with administrative issues including managing human and other necessary resources for the whole organisation.

There are also special purpose '**units**' in the organisation.

Internal Audit Unit: They ensure conformity of activities carried in all departments with laid down guidelines of the organisation. They also vet documents and information used by the organisation.

Public Relations Unit: They deal with all aspects of publicity, media, and provision of information the public.

Protocol Unit: The unit operates from the Executive Secretary's office. They assist senior management in terms of easing their needs to be obtained from outside the organisation. This ranges from processing and following up visa applications from foreign embassies to providing information for meetings to be attended by the executives. They are also involved in reception and protocol duties for the Authority's staff and visitors.

The FCDA board: The Board has eight members appointed by the President of the Federal Republic of Nigeria. It includes the Minister of the FCT as the Chairman. The composition of the board members is usually 'technically biased' to suit the mandate of the organisation. They meet periodically and deal with issues relating to policy and direction of the organisation at the highest level.

3.0 EMPLOYEE STRUCTURE

As at May 2008, the organisation was made up of **1705 employees**. Breakdown of employees within departments is presented in Table 7. Employees of the Department of Special Duties and the Special Purpose Units are within the Executive Secretary's office.

TABLE 7: DISTRIBUTION OF EMPLOYEES WITHIN FCDA	
Executive Secretary's office	90
Department of Finance and Administration	642
Department of Engineering Services	428
Department of Public Buildings	272
Department of Urban and Regional Planning	106
Department of Resettlement and Compensation	89
Department of Survey and Mapping	78
TOTAL	**1,705**
Source: Department of Finance and administration, FCDA (2008)	

4.0 NATURE OF FUNDING

Internal: The bulk of FCDA's funding comes from two sources in the Federal Government, through its parent organisation, FCTA. First, it receives a **national budgetary allocation** mainly for development projects in the FCT. Secondly, because FCTA operates as a State of the Federation constitutionally, it makes some internally generated revenue, while also receiving additional funds from Federal government by **statutory allocation**. FCDA receives funds from this statutory allocation for its recurrent and capital expenditure.

External: External (intervention) funds mainly come from

- For aids and supported projects from organisations such as the World Bank.
- Private sector and non – governmental organisations

All interviewees indicated the general lack of funds to meet its yearly budgetary plans (manly due to prioritisation of Government expenditure at Federal Government level) and irregular provision of funds, which affects cash flow management, and payment of contractors and consultants. Some directors noted that the use of public private partnerships (PPP) in now being introduced to deal with shortage of funds for development projects.

5.0 NATURE OF SERVICES OUTSOURCED

FCDA has its own '**in- house project professionals**' including Architects, Engineers, Quantity Surveyors, Town Planners, etc. It also outsources its services to both **external 'consultants'** and **'contractors'**. Contractors are always involved in construction and engineering works, supply of components and consumables, etc.

Professional services are outsourced to consultants usually when the project or service is too large such that the in house professionals cannot fully carry out the service. Majority of design works are outsourced to consultants, while FCDA carries out project supervision.